TECHNICAL SUPPORT DOCUMENT (TSD) FOR TITLE V PERMITTING OF PRINTING FACILITIES

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ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
BACT	best available control technology
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring system
CI	central impression
CMS	continuous monitoring system
COMS	Continuous opacity monitoring system
CPDS	certified product data sheets
CPMS	continuous parametric monitoring system
CSI	Common Sense Initiative
CTG	Control Technique Guideline
EMC	Emissions Measurement Center
EPA	U.S. Environmental Protection Agency
FESOP	federally-enforceable State operating permit program
FIP	Federal Implementation Plan
HAP	hazardous air pollutant
IR	infrared
LAER	lowest achievable emission rate
LLMB	liquid-liquid material balances
MACT	maximum achievable control technology
MRRT	monitoring, reporting, recordkeeping, and testing
MSDS	material safety data sheet
MW	molecular weight
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	new source performance standard
NSR	new source review
O&M	operation and maintenance
OECA	Office of Enforcement and Compliance Assurance
OSIL	on-site implementation log
PAL	plant-wide applicability limit
ppmv	parts per million by volume
PPR	product and packaging rotogravure
PR	publication rotogravure
PSD	prevention of significant deterioration
PTE	potential-to-emit
QA	quality assurance
QC	quality control
RACT	reasonably available control technology
RTD	resistance temperature detector

scfm	standard cubic feet per minute
SIP	State Implementation Plan
SSM	start-up, shutdown, and malfunction
TGD	Technical Guidance Document
TSD	Technical Support Document
U.S.	United States
VE	visible emissions
VOC	volatile organic compound
WWF	wide-web flexographic
WPN1	White Paper Number 1
WPN2	White Paper Number 2

CHAPTER 1
OVERVIEW

While commonly considered an industry dominated by small businesses, the printing and packaging industry has its share of title V and federally-enforceable State operating permit (FESOP) program facilities. More than 2,000 printing facilities are expected to require Clean Air Act title V operating permits. Thousands more require other types of air permits. The printing and packaging industry presents unique challenges in the air permitting arena due to the diverse applications that exist within it as well as within individual facilities.

During the development and issuance of title V permits, several issues have been identified related to permitting printing facilities. The issues have generally concerned monitoring requirements and practical enforceability, testing provisions, implications of the National Emission Standard for Hazardous Air Pollutants (NESHAP) for the Printing and Publishing Industry, inflexible conditions in old new source review (NSR) permits, treatment of insignificant sources, and promoting operational flexibility through mechanisms such as advance approvals. Industry has identified instances where the absence of established national guidance in these areas has resulted in permitting confusion, inconsistent results, and frequent permitting delays. Table 1-1 presents a summary of the issues that are considered in this document. We, the United States (U.S.) Environmental Protection Agency (EPA), provide a listing and description of each issue, our recommendations and/or suggestion(s), and the section reference where the reader can find more details.

Consistent with our stated goals to support effective, streamlined implementation of title V and other State permit programs, we have developed this technical support document to assist you, State, local, and Tribal permit writers, in issuing and revising such permits for printing and flexible packaging facilities. In addition to providing assistance to you, this guidance will also benefit environmental management personnel at printing facilities. In particular, we present approaches acceptable to us for you to consider for meeting Clean Air Act requirements under title V. In addition, many of the approaches may also be suitable for establishing monitoring and recordkeeping requirements for smaller (i.e., non-title V) printers subject to federally enforceable permits, or synthetic minor sources. Finally, most of the approaches discussed in Chapter 6 concerning “smart permitting” have the potential for more universal application, i.e., beyond the printing sector.

The appropriateness of these approaches must ultimately be considered by you on a case-by-case basis. Through this guidance, we provide suggestions and possible approaches that generally appear promising in their ability to assure compliance with all applicable requirements, while addressing operational flexibility concerns at printing facilities.

Table 1-1. Guidance For Addressing Title V Permitting Issues for Printers

CATEGORY/ISSUES	GUIDANCE	SECTION
Title V Applicability		
How can owners or operators of major printing facilities determine potential to emit (PTE)?	The PTE calculation should reflect the maximum hourly usage rate times the worst-case VOC/HAP content times the maximum feasible hours of operation. The PTE would be reduced after consideration of any federally enforceable limits on emissions, hours of operation, and/or material throughput.	2.1.1
What are acceptable monitoring, recordkeeping, reporting, and testing (MRRT) requirements for maintaining exempt source status?	For sources who maintain their actual emissions below 50 percent of the major source threshold, EPA supports the use of less rigorous monitoring and recordkeeping requirements; such as the use of formulation data in lieu of any Method 24 (M24) test data to determine VOC content; monthly, or possibly quarterly tracking of inventories to determine material use; daily checks and records of parameter monitoring data to demonstrate capture and control system performance; and annual calibration of monitoring equipment. For synthetic minor sources whose actual emissions are over 50 percent of the major source threshold, the stringency of monitoring requirements should increase as the source's emissions approach the major source thresholds. For sources whose actual emissions are expected to exceed 75 to 80 percent of the major source thresholds, you should consider the need for continuous parameter monitoring and recordkeeping, monthly tracking and daily proration of material use, and VOC testing for high-volume printing materials that lack adequate formulation information.	2.2.1
How can printing equipment be described in a Title V permit?	Equipment should be described in detail sufficient to be linked to applicable requirements. The information must also allow your inspectors to match each individual unit observed during a plant visit with the permit's description for that unit.	2.3.2
How can insignificant activities be treated?	Permit can contain provisions to operate/add/delete any activities subject to only generally applicable requirements (GARs), provided that such activities meet all relevant GARs on the permit.	2.3.3
Monitoring		
What are the appropriate monitoring parameters for catalytic oxidizers, thermal oxidizers, and capture efficiency?	Appropriate parameters are contained in the compliance assurance monitoring (CAM) protocols developed to cover control and capture efficiency.	3.1

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
How does the required frequency of data collection for instrumental monitoring relate to the margin of compliance?	While a margin of compliance remains demonstrated over time, a facility may be allowed to reduce the data collection frequency, or to relax the quality assurance (QA) and quality control (QC) procedures.	3.2.2
What are acceptable approaches for opacity monitoring?	Allow observation-based opacity monitoring and reduce frequency where continued observations demonstrate compliance. In addition, for sources that have little or no potential to contribute to particulate emissions (e.g., gas-fired boilers, thermal oxidizers or other volatile organic compound (VOC)-only emitting units), eliminating opacity monitoring may be considered.	3.3
What is the Environmental Protection Agency's (EPA's) guidance for handling missing data?	A source must develop (for the permitting authority's approval) data collection techniques for all times including periods of process or instrument malfunction, as well as procedures to fill in missing data.	3.4
How do we distinguish deviations from violations in reporting?	Absent other State-only requirements, parameter deviations are not necessarily violations per CAM/ part 71 preamble [40 CFR part 71.6 (a)(3)(i)(c)].	3.5
Testing		
What are acceptable sources of material composition data?	Laboratory measurements (using M24, M24A, or M311) or formulation data [from certified product data sheets (CPDS) or material safety data sheets (MSDS), if it contains the relevant information] can be use. If questions arise, we will rely on laboratory measurements.	4.1
Must printers always use M24A for printing inks?	M24A should be used only for publication rotogravure inks and coatings that contain volatile matter. EPA changed the title of M24A to help clarify this.	4.2.1
How can M24 be adjusted for high water content coatings?	Only one precision adjustment can be made, per our February 3, 1986, policy memo.	4.2.2
Should printers use M24 for non-ink and non-coating materials - such as fountain solutions and cleaning compounds?	No, since M24 applies to paints, varnishes, lacquers, or related surface coatings that contain volatile matter, not to non-ink or non-coating materials.	4.2.3
How is the VOC content to be determined for thin-film radiation cured coatings, and non-ink and coating printing products?	An American Society for Testing and Materials (ASTM) study is underway to answer this question. Future guidance will be consistent with the results of this study. Until then, printers may use formulation or supplier data for VOC content of non-ink and non-coating materials.	4.2.3

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
Are non-lithographic processes eligible for use of a retention factor where low vapor pressure cleaning solvents are used?	Yes. The 50 percent retention factor use is available for all flexographic, rotogravure, letterpress, and screen printing operations, consistent with guidance provided in EPA's *Alternative Control Technique Document: Offset Lithographic Printing* (EPA, 1994. EPA-453/R-94-054).	4.2.4
Under what conditions can M25A be used to determine the destruction efficiency of an oxidizer?	Consistent with the approach presented in EPA's Emission Measurement Center (EMC) guidance and codified in subpart KK, M25A can be used for determining outlet concentrations when: 1) an exhaust concentration of 50 or less parts per million by volume (ppmv) as carbon (C_1) is required to comply with the applicable standard; 2) the inlet concentration and the required level of control results in an exhaust concentration of 50 or less ppmv as C_1; or the high efficiency of the control device alone results in an exhaust concentration of 50 or less ppmv as C_1. (See http://www.epa.gov/ttn/emc/guidlnd/gd-033.pdf.) In situations where M25 is not viable, such as those described in Section 1.1 of M25, a printer may opt to use M25A on the inlet as well as on the outlet.	4.3
How often must control and capture device testing be performed?	A source owner or operator must conduct the initial testing, in which the parameter(s) for ongoing control and capture device monitoring are identified and the operating range(s) for the parameter(s) is (are) established. As long as the source does not change operations in a way that could affect capture or control device efficiency, the ongoing parameter monitoring generates data in the operating range(s) that assure compliance, and the source practices good operating, maintenance, and QA/QC procedures, only periodic retesting for control efficiency and for capture efficiency for unenclosed presses, coaters, or laminators is needed - typically once per title V permit term[1] - unless the permitting authority requires more frequent testing.	4.4
What are the appropriate performance test conditions?	Perform testing at expected operating conditions. Subsequent retesting need only occur when: 1) different operating conditions present a more challenging capture or control device scenario than was previously tested and 2) compliance is not otherwise assured.	4.5
How can destruction efficiency requirements be met during low flow/ concentrations?	Allow an outlet concentration of 20 ppm as C_6H_{14} to be a surrogate for destruction efficiency.	4.7

[1] Protocols A and B in Appendix C suggest continuous, ongoing parameter monitoring in lieu of periodic retesting for capture efficiency in temporary total enclosures is appropriate. We believe this to be accurate, but will take your comments on the suitability of this approach and on the changes that would warrant retesting.

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
When is capture efficiency testing required?	See July 1997 guidance from J. Seitz, which provides guidance on the need for capture efficiency testing.	4.8.1
When can alternative capture efficiency testing be allowed?	See February 1995 guidance from J. Seitz, which provides guidance on the use of alternative capture testing. See also EMC's *Guidelines for Determining Capture Efficiency* (http://www.epa.gov/ttn/emc/guidlnd/gd-035.pdf).	4.8.2
MACT Compliance		
How can multiple compliance options for subpart KK be efficiently incorporated in a title V permit?	A matrix of compliance demonstration options can be incorporated into the permit using citations for associated monitoring, reporting, recordkeeping, and testing (MRRT) provisions and other citations consistent with White Paper Number 2 (WPN2) where needed.	5.2 Appendix E
When should continuous parameter monitoring system (CPMS) and continuous emissions monitoring system (CEMS) performance specifications be used?	EPA Performance Specifications (PS) exist for many types of Continuous emissions monitoring systems (CEMS). (See 40 CFR part 60, appendix B.) Where sources rely on CEMS with PS to provide compliance data, the PS should be used. Note that CEMS with PS may be required by regulation, by permitting authorities, or by permits. Also note that for a percent removal efficiency calculation using CEMS, sources must monitor not only inlet and outlet concentration but also volumetric flow rate, meaning sources must use PS6, as well as PS8 or PS9. PS for continuous parameter monitoring systems (CPMS) are under development but do not exist now. Until PS for CPMS are promulgated, in order to assure compliance, sources must develop and submit monitoring plans for approval that, in part, explain how the following elements as relevant are addressed: indicator(s) of performance, measurement techniques - including detector type, location and installation specifications, inspection procedures, and QA/QC measures - monitoring frequency, averaging time, and monitor out-of-control periods. Note that all elements of a monitoring plan may not be appropriate for CPMS. By way of example, drift calibrations are not relevant for manual recordkeeping and need not be addressed as an element in a monitoring plan.	5.3
What principles apply to tracking material consumption and recovery under subpart KK?	Facilities should follow the guidance in section 3.2 and Appendix D regarding permit content and monitoring plan. Material tracking systems are considered CMS for purposes of subpart KK and the MACT General Provisions, although the CMS provisions should be applied reasonably to meet the needs of material tracking systems.	5.3.1

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
How must permits address the exemption of incidental or ancillary printing operations?	The permits should require that material usage and composition be tracked at least monthly to establish and maintain incidental/ancillary status. Facilities also should follow the guidance of section 3.2 and Appendix D for these material tracking systems.	5.3.1
What is EPA's guidance on CPMS for subpart KK?	CPMS qualify as CMS under the MACT General Provisions. All the elements included in the CMS provisions apply to CPMS, but some specific CMS provisions may need to be adapted to apply to CPMS properly. As with all monitoring systems, we support that the facility prepare a monitoring plan for CPMS. We are currently developing performance specifications (PS) for CPMS. We suggest requirements for temperature and pressure monitors that you and facilities may use until these PS are promulgated. A facility may propose different requirements for these CPMS, but the facility will have to demonstrate to you on a case-by-case basis that the proposal is adequate.	5.3.2
What is EPA's intended interpretation of subpart KK's CEMS compliance options?	We intend for facilities to determine the percent removal efficiency for each month based on monitoring the mass flow rate of total organic volatile matter at the inlet and outlet of the control device. This requires monitoring not only inlet and outlet concentration but also volumetric flow rate, meaning facilities must use PS6, as well as PS8 or PS9. Facilities using solvent recovery systems may monitor volumetric flow rate at only one point (inlet or outlet) provided that they demonstrate that this flow rate is essentially constant across the control device and they implement a good O&M program to detect and repair any leaks in the system. Facilities using oxidizers must monitor volumetric flow rate at the inlet and outlet of the control device.	5.3.3
Which facilities must submit a Notification of Compliance Status?	Every facility subject to subpart KK's emission limits must submit a Notification of Compliance Status.	5.4.1

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
Which facilities must submit summary reports, and when?	All facilities must submit Semiannual Summary Reports, regardless of the option used to demonstrate compliance. CEMS, CPMS, and materials tracking systems are all considered continuous monitoring systems (CMS) within the meaning of the MACT General Provisions. The Semiannual Summary Reports summarize the monitoring data collected over the preceding 6 months, highlighting where malfunction of any instrumental monitor occurred or where the data show deviations from permit requirements. Under some circumstances, additional MACT General Provisions CMS reporting requirements (e.g., Excess Emissions and Monitoring System Performance Reports) may apply. Each Semiannual Summary Report should cover a calendar half (January - June or July - December) and is due by the end of the following month. However, the reporting period can be adjusted to coincide with other reporting requirements by mutual consent of you and the facility.	5.4.2
What is the relationship between material composition testing and the General Provisions on performance testing?	We do not intend for testing to determine the composition of inks, coatings, etc. to be subject to the full range of requirements included in the MACT General Provisions (40 CFR 63.7). However, the facility is responsible for obtaining composition data that meet the requirements of subpart KK and is liable if test results do not match formulation data received from suppliers. Section 63.7(f) applies if a facility wishes to rely on an alternative test method for determining material composition.	5.4.3
What is EPA's guidance on performance testing under subpart KK?	The TSD provides a number of clarifications related to performance testing for oxidizers. We recommend Methods 204 through 204F for capture efficiency testing. For additional guidance, we recommend *Guidelines for Determining Capture Efficiency* (http://www.epa.gov/ttn/emc/guidlnd/gd-035.pdf).	5.5
What needs to be included in a title V permit placeholder for subpart JJJJ?	At a minimum, a placeholder needs to (1) acknowledge that subpart JJJJ applies and cite the subpart; (2) define the type and timing of the permit revision process that will be used to add the specific compliance obligations to the permit; and (3) define how the facility will monitor compliance starting on the compliance date. An example placeholder for subpart JJJJ (based on the proposed rule) is included in Appendix F.	5.6.4 Appendix F

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
Streamlining and Smart Permitting		
How can multiple requirements applying to same emissions unit be streamlined in order to assure compliance with all of the applicable requirements (i.e., focusing compliance on the most rigorous set of requirements)?	Streamlining per WPN2 may be possible for certain printing operations, particularly where highly efficient add-on controls are used.	6.2
How can existing New Source Review (NSR) permits which contain short term limits (e.g., daily) that specifically limit the type and amount of materials and/or production be changed to allow more operational flexibility?	Where the limits were established for applicability purposes, all printers (as well as other sources) may use a mass balance based formula to reformat those permit conditions. Compliance with such a formula could be achieved on an annual basis rolled monthly for all inputs to the formula (i.e., by tracking material usage on a monthly or job basis). Where short-term limits were established to enforce reasonably available control technology (RACT) limits or to safeguard the National Ambient Air Quality Standards (NAAQS), only printers and other sources with highly variable operations may use the mass formula-based approach over a longer time period, not to exceed monthly. While all printers with multiple product or raw material usage would presumptively qualify, printers meeting RACT with an add-on control device also need to monitor control efficiency on a short-term basis (e.g., combustion temperature) and may need to prorate emissions to the shorter averaging time based on production and/or materials usage.	6.3
Is a permit revision needed in order to use the latest test results?	No. Recent experience supports an approach common to pilot projects which would require no permit revision where replicable operating procedures for testing are approved in the standard or the title V permit and used, provided that the permitting authority receives an advance notice of the forthcoming test and first approves the test results. The source would then certify compliance based in part on whether it followed the approved testing result and provided the required notices. A permit revision would be required in those other cases where the operating procedure for testing in the permit was not judged to be replicable.	6.4.1
How can I implement alternative operating scenarios for existing emissions units?	We encourage this smart permitting technique to provide flexibility to the source to switch among different modes of operation for its existing equipment. Under this approach, the permit must identify each anticipated operating scenario and clearly indicate the applicable requirements associated with each scenario.	6.4.2

Table 1-1 (continued)

CATEGORY/ISSUES	GUIDANCE	SECTION
How can I implement alternative operating scenarios involving new capacity?	Absent final Agency policy on developing flexible air permits, additional mechanisms are only available in the context of EPA pilot projects for use in printers' title V permits to increase their operational flexibility. You should coordinate with your EPA Regional Office to determine which approaches, such as advance approval mechanisms, are available under your current rules and in the particular source situation to provide more operational flexibility with no less environmental protection.	6.4.3

This draft report is a result of discussions held with the printing industry and representatives of State air quality agencies to address these permitting issues as part of Pollution Prevention in Permitting Projects (P4) and the Common Sense Initiative (CSI). The final version will reflect those changes made as appropriate in response to any comments received on this version during the comment period provided by us.

1.1 WHY DOES TITLE V PERMITTING FOR PRINTERS WARRANT SPECIFIC GUIDANCE?

While commonly considered an industry dominated by small businesses, the printing and packaging industry also has its share of title V and FESOP facilities. This is because most printing and packaging firms are located within urban areas where ambient air quality may not meet current federal standards. As a result, the thresholds for major sources in urban areas designated nonattainment have been lowered and have caused many more businesses to become subject to title V and FESOP permitting.

Due to the nature of the industry, printing and packaging facilities present unique challenges in the air permitting arena and often have been viewed as complex sources to permit. Diverse applications exist within the industry, as well as within facilities. Printing is a manufacturing process used to create such diverse items as decals, labels, books, pamphlets, potato chip bags, candy bar wrappers, soft drink cans, fleet markings, and imprinted textiles. Facilities engaged in the production of these products have chosen printing as their manufacturing technology and often do not consider themselves "printers," but converters, packagers or manufacturers. The major print processes that we address in this Technical Support Document (TSD) are as follows:

- Offset lithography;
- Screen printing;
- Flexography;
- Product/packaging rotogravure; and
- Publication rotogravure.

It is not unusual for a single printing facility to co-mingle processes. For example, a facility that has offset lithography capabilities may also engage in rotogravure or flexography. While each process applies ink, and occasionally coating, to a substrate, each process is unique, as ink transfer is accomplished through very different means. The process selected depends on the economics associated with making the product, including run length, quality demands, and finishing needs. For example, printing on a textile-based substrate, which is very pliable, can only be accomplished with the screen printing process. Producing long run books and magazines via a web offset lithographic or rotogravure application is more economical than a sheetfed offset lithographic application. Likewise, flexible packaging is best manufactured with either the flexographic or rotogravure process due to the nature of the substrate and the necessary inks and coating compatibility requirements.

The manufacturing of printed matter and packaging can be broken into three distinct steps – prepress, press, and postpress activities. For a detailed description of the prepress, pressroom and

post-press activities, as well as the different printing processes, see Appendix A. Typically, the pressroom accounts for the majority of emissions released from any printing operation. The pressroom is where most inks and coatings, as well as other input materials are applied to the substrate. The differences among the various print processes is truly evident in the press area. The processes vary in the type of input materials and equipment used. It is important to understand that the differences are so distinct that the input materials and equipment, as well as the control approaches, are not interchangeable. For example, inks used for offset lithographic operations cannot be used in screen printing applications. As a result, unlike many other types of manufacturing facilities, generic terms and conditions that fit all printing processes do not exist.

1.1.1 What Are the Applicable Requirements for Title V Permits?

Printers frequently use materials which generate both volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions. As a result, these operations have received considerable attention by State and Federal Clean Air Act programs that target these pollutants. State Implementation Plans (SIPs) for managing air quality have established requirements for use of reasonably available control technology (RACT) to control emissions of VOCs from certain printing technologies. The SIPs also include NSR requirements that govern printing facility expansions, often creating additional requirements for controlling emissions from new and modified emissions units. Some printing technologies are also subject to requirements in new source performance standards (NSPS). And finally, printers who use significant quantities of HAPs can also be subject to a maximum achievable control technology (MACT) standard.

The Clean Air Act dictates that each major source obtain a title V operating permit. The permit is intended to compile the requirements that apply from each of the different Clean Air Act programs. The permit serves as a contract between you and the regulated facility, identifying the specific limitations to control emissions and defining how these limitations will be met through monitoring, recordkeeping, reporting, and testing (MRRT) procedures. You must develop title V permit conditions to implement these procedures, and the conditions must be verifiable and enforceable from a practical standpoint. These procedures must provide facilities with the ability to demonstrate compliance with the emissions limitations on a continuous basis. Facility personnel seek permit conditions that clearly define compliance expectations and they expect permit requirements that simplify the impact of the multiple, and potentially overlapping requirements.

Additionally, as explained above, the differences among the various printing processes do not lend themselves to the development of a general permit that will fit all processes. On the otherhand, we do expect that printers of the same type can be effectively permitted using many of the same permit terms, ultimately, most are likely to be unique and not eligible for a general permit. The challenge for you, as a permit writer, is to craft a permit that allows each identified printing process to utilize appropriate technologies, maintain flexibility to respond to ever changing market conditions, allow for growth and process modifications, and minimize compliance demonstration requirements, while still ensuring the environment is protected or improved. It is critical to acknowledge that printing industry technology may change more rapidly than the 5-year period corresponding to an operating permit period. A "smart" operating permit should be able to accommodate these technology changes. Most important to

printers is developing a permit that allows a facility to operate in compliance without unnecessarily limiting flexibility to operate.

1.1.2 What Are The Title V Issues Related to Printing Facilities?

Several issues, including the appropriateness of certain monitoring and testing requirements for demonstrating compliance, and the practical enforceability of these provisions have been identified related to title V permitting of printing facilities. In addition, there are significant differences in approaches to requiring title V monitoring, recordkeeping, reporting, and compliance testing associated with different applicable requirements. For example, if a facility is subject to the NESHAP for the Printing and Publishing Industry, provisions for demonstrating compliance with subpart KK need to be incorporated into its title V permit along with the relevant SIP and NSR requirements. Where there are multiple, overlapping requirements that apply to a source owner or operator, an acceptable procedure for streamlining these requirements would be helpful. Streamlining requirements can both simplify compliance demonstration for the facility and clarify expectations being placed on the facility by you.

For some printers, older NSR permits have been found to contain permit conditions that constrain emissions below a certain amount and severely restrict operational flexibility. For example, facilities with capture and control systems are faced with prior NSR permit limits on the VOC content in applied inks and coatings, or on the use of specific inks, coatings, and solvents. These limits constrain how they operate, but not necessarily their VOC emissions. NSR permits are also known to include short-term limits (e.g., hourly or daily) that are unrelated to an applicable requirement (or to an applicable requirement that the facility avoids by taking the permit). These prior NSR conditions may take away operational flexibility unnecessarily from facilities.

Pilot permit activities have identified opportunities for additional mechanisms to promote operational flexibility. The use of these mechanisms needs to be clarified. Further, the treatment of insignificant activities in title V permits has been inconsistent and caused confusion.

To address these issues, this document describes how to develop title V permits that maintain the intent of the applicable requirements but minimize the burden on printers, thereby promoting the concept of operational flexibility and "smart" permitting. Suggestions concerning appropriate test method selection, as well as the frequency and conditions for conducting the test are presented. A matrix of MACT compliance options demonstrates how source owners and operators can keep open all options for complying with subpart KK that are relevant to their facility through their permit. Protocols for streamlining are discussed, and a mass-balance formula based approach is presented to replace inflexible NSR conditions. Situations are outlined where compliance with annual potential-to-emit (PTE) limits can be demonstrated through 12-month rolling summations of monthly emissions, eliminating the need for short-term limits.

1.2 WHAT IS THE PURPOSE OF THIS DOCUMENT?

The main purpose of this document is twofold: to facilitate opportunities for more efficient permit issuance by simplifying the development of title V permits for printing facilities and to clarify "smart"

permit writing techniques for the printing and other industry sectors. This document contains several approaches which we would support if you choose to pursue them and if such approaches are not prohibited under existing State regulations. Techniques contained in the document are intended to reduce the backlog for issuing and revising title V and other air permits.

Considerable time may be spent by you in preparing a title V permit for a printer, as well as negotiating the terms and conditions. In discussions with States and the printing industry, we learned that the time spent between permit application submittal and permit issuance and/or revision may be reduced up to 50 percent by following the techniques in this document. The benefits gained from use of the techniques will vary depending on the existing State title V procedures, as well as the printing processes and requirements that apply for a specific permit applicant. Faster permit issuance benefits the environment, since title V provisions consolidate all applicable requirements, add compliance monitoring where appropriate and provide certifications from source owners and operators attesting to their compliance with applicable requirements. However, we acknowledge that speed in permit issuance must not compromise public participation. The public must still be provided time to comment on the title V permit, and challenge the permit, if warranted.

Another important objective of this document is to promote common understandings among all affected parties including us and you. This document clarifies our policy concerning certain provisions of the title V operating permit program and refers the permit writer to our existing guidance where applicable. By following these approaches, you will foster greater certainty and consistency in permitting, since without guidance disparate approaches may be used by different permit engineers to permit similar sources, or to permit similar equipment within a source.

The approaches contained in this TSD focus on the development of model permitting components (i.e., templates) tailored for individual facilities. You should be aware that there may be instances, such as when facilities use compliant coatings or when you permit area sources, or if facilities select just a few compliance scenarios, where the issuance of a general title V permit that meets part 70 requirements and categorizes these instances can be appropriate and economical. Note that facilities with control devices or prior NSR conditions or PTE limits may require customized, as opposed to general permits. However, as mentioned above, one or more of the general permit approaches approved for use elsewhere can also be employed in the custom design of permits. That is, you should be able to incorporate readily permit language that has already been approved to implement one or more model component approaches from one facility to another most of the time. We expect your use of general permits and relevant permit components will result in significant administrative savings.

We recommend the approaches contained in this document for you to consider for meeting Clean Air Act requirements under title V. These approaches will provide the opportunity to address operational flexibility concerns while assuring compliance with all applicable requirements. In addition to guiding performance-based principles, we present illustrative examples. The examples are not meant to be prescriptive, nor do they address all the possible scenarios that you may encounter. We present the examples as potential models that can be used and adjusted as appropriate for inclusion in a title V operating permit. Some examples present information more appropriately kept off-permit in a permit

application or other supporting documentation. The appropriateness of these examples must be considered by you on a case-by-case basis.

This document has been designed primarily to address the permitting issues of the most complex and large printers–namely those subject to title V permitting. You should be aware that the approaches included in this document may also be appropriate for establishing monitoring and recordkeeping requirements for smaller printers subject to federally-enforceable permits, or synthetic minor permits. In addition, the TSD contains several approaches (including those for determining emissions, addressing insignificant activities, and conducting certain testing where applicable) which are potentially useful to smaller printers as well, and certain smart permitting approaches which are intended for potential use beyond the printing sector.

1.3 HOW IS THIS REPORT ORGANIZED?

Chapter 2 discusses the origin of the applicable requirements that apply to printers, as well as specific examples of these requirements. In Chapter 3, the principles of title V monitoring and compliance assurance monitoring (CAM) are discussed, and examples that serve as presumptively acceptable title V monitoring are presented. Detailed CAM protocols for the printing and flexible packaging industries are contained in Appendix C. Chapter 4 presents testing issues related to the application of our reference methods, as well as the conditions and frequency for testing units with add-on control equipment. In Chapter 5, the subpart KK and subpart JJJJ MACT standards are described. Finally, Chapter 6 discusses streamlining options for printing facilities and provides some examples, and presents additional smart permitting mechanisms for achieving operational flexibility. An approach that some States have used to replace prescriptive NSR limits on PTE is presented. This approach relies on equation-based limits, which are verifiable and enforceable.

CHAPTER 2
APPLICABILITY OF TITLE V PERMIT REQUIREMENTS

Chapter 2 discusses which printing facilities are potentially subject to the requirements for obtaining a title V operating permit and how certain facilities can become exempt from these requirements. This chapter describes the requirements that apply to printing facilities for inclusion in title V operating permits. The treatment of insignificant activities in a title V operating permit is also addressed.

2.1 WHAT ARE THE TITLE V APPLICABILITY CRITERIA THAT APPLY TO PRINTING FACILITIES?

Owners or operators of major sources are required to obtain title V operating permits. Sources which have the potential to emit "major" quantities of regulated pollutants are major sources. Owners and operators of minor sources, those sources with potential emissions less than major source thresholds for VOCs or HAPs, can also be subject to title V if the units that comprise the facilities are subject to federal emissions standards, including NSPS established under §111 or NESHAP established under §112 of the Clean Air Act. Once a facility has at least one unit that requires a title V permit, applicable requirements for all significant units must be addressed in the title V permit. For printing facilities, title V applicability is generally triggered by the major source criteria for potential emissions of VOCs or HAPs.

2.1.1 How do Owners or Operators of Major Printing Facilities Estimate Potential to Emit?

As part of our Emission Inventory Improvement Program (EIIP), we have established an acceptable method (as well as alternative methods) for estimating facility-wide emissions for emission inventory purposes (EPA, 2002). The method is believed to conservatively estimate actual emissions, and can also provide the framework for estimating PTE. The method involves performing a mass balance approach that accounts for materials used in all press operations in the facility, and accounting for control efficiency and capture efficiency as applicable. The method also provides guidance for applying retention factors, where appropriate, that reflect the amount of VOC retained in the substrate. An alternative method uses emission factors (either site-specific or AP-42) applied to solvent use estimates. AP-42 emission factors are generally not acceptable for applicability determinations. However an acceptable approach may be to build in a margin of error to account for the uncertainty inherent in AP-42 emission factors.

Calculating PTE for printing operations is not as straightforward as for sources that have documented maximum throughput capacities, e.g., a boiler. Applying the EIIP approach to calculate existing emissions requires the use of data on actual usage rates for individual materials with known

VOC/HAP contents. However, to calculate PTE, conservative assumptions must be made to project maximum material usage rates and VOC/HAP content for the PTE material balance. PTE is to represent the "maximum capacity of a stationary source to emit under its physical and operational design. Any physical or operational limitation on the source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation, or on the type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the (EPA) Administrator." In simplistic terms, the PTE calculation should reflect the maximum hourly usage rate times the worst-case VOC/HAP content times the maximum feasible hours of operation. The PTE would be reduced after consideration of any federally enforceable limits on emissions, hours of operation, material throughput, etc. The maximum hours of operation, unless limited by permit, should be based on round-the-clock press operation (8,760 hours/year), less time required for makeready/setup based on a documented, conservative review of historical data for the facility.

2.1.2 What are the Major Source Thresholds?

Major source thresholds were established in the Clean Air Act for both "criteria" pollutants and HAPs. National Ambient Air Quality Standards (NAAQS) have been developed for all criteria pollutants. The major source thresholds for criteria pollutants vary depending on the designated attainment status of the area that contains the sources with the NAAQS. For VOC sources, such as printing facilities, the major source applicability criteria are a function of the area's attainment status with respect to the ozone NAAQS. The specific VOC emissions thresholds set by the Clean Air Act for defining major sources by ozone NAAQS attainment area designation are shown in Table 2-1.

Owners and operators of sources that use one or more of the designated HAPs can also be owners and operators of major sources. The major source thresholds for HAPs are based on whether a source could emit 10 tons per year or more of any individual HAP or 25 tons per year or more of any combination of HAPs. For printing facilities, HAPs frequently used include toluene, hexane, methyl ethyl ketone, and glycol ethers.

Table 2-1. VOC Emission Thresholds

Area Designation	Major Source Threshold Potential VOC Emissions tons/year
Nonattainment Area Designation	
Marginal or Moderate	100
Serious	50
Severe	25
Extreme	10
Attainment Area Designation	
Ozone Transport Region	50
All Other Areas	100

2.1.3 What if Actual Emissions are Below Major Source Levels?

In April 1998, we issued a policy memorandum entitled, "Potential to Emit Guidance for Specific Source Categories," (EPA, 1998a). The memorandum presented emission cutoffs for different source categories that owners or operators could use as enforceable limitations on their operations to achieve minor source status and avoid title V applicability. Examples for various printing sectors are presented in an attachment to the memorandum entitled "Technical Support Document for Potential to Emit Guidance Memo. Documentation of Emission Calculations." Based on this PTE guidance, a source whose actual emissions are below 50 percent of the major source threshold does not need to be subject to a case-specific permit to obtain minor source status, provided the facility owner or operator maintains adequate records to demonstrate that actual emissions are below this 50 percent threshold. For a source with actual emissions above 50 percent of the major source threshold (but less than the major source threshold), the owner or operator of the source should follow agency procedures for the design and implementation of a site-wide PTE cap as a means to gain a federal enforceable limit and status as a synthetic minor source.

2.1.4 NESHAP Sources

If a source's potential emissions are below HAP and criteria pollutant major source thresholds, its owner or operator may be required to obtain a title V operating permit if it is subject to one of the NESHAP. The applicability of many NESHAP is based on the same 10/25 tons per year major source criteria. This is the case with the NESHAP for the "Printing and Publishing Industry" (40 CFR part 63, subpart KK). Subpart KK sets the MACT requirements for facilities that are HAP major sources and use publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses.

You should note that printers may also be subject to the NESHAP for the "Paper and Other Webs Coatings." This rule was proposed on September 13, 2000 (65 *Federal Register* 55332), with a final rule expected by November 2002.

2.1.4.1 How Do I Avoid Being a Major Source Under Subpart KK?

A source owner or operator may avoid being subject to major source requirements under subpart KK via an *area source* designation. Such a designation can be obtained by either: 1) demonstrating area source status under subpart KK based on tracking the *use* of HAP materials; or 2) accepting enforceable permit conditions that limit HAP *emissions* and classify the source as non-major under subpart A.

Subpart KK includes a mechanism for owners or operators to establish area source status. Once the area source status is established, it relieves most of the requirements of the standard. An owner or operator's facility is considered an area source if it uses less than 10 tons per each rolling 12-month period for each HAP, or 25 tons per each rolling 12-month period of any combination of HAPs. The accounting of HAP use against these thresholds include all materials used for printing and publishing and those used for other purposes/processes at the facility.

Owners or operators of facilities can also avoid being subject to subpart KK by accepting permit conditions that limit HAP emissions (not use) to below the same 10 and 25 ton rolling 12-month HAP thresholds that are used to define a major source. Subpart A defines these non-major sources as area sources as well.

To demonstrate area source status under either requirement, the owner or operator must maintain records of all measurements and calculations necessary to show that either HAP use, or, if the facility has HAP area source emission limits, HAP emissions are below area source thresholds. Records include the accounting on at least a monthly basis of the mass and/or emissions of all HAP-containing materials used and the amount of HAP in each HAP-containing material used. The level of detail necessary in these records can vary depending on the gap between HAP emissions or use and the area source threshold. Simple purchase records may be all that is necessary for an owner or operator of a facility that uses low-HAP materials in low quantities. On the other hand, an owner or operator of a facility that is close to the major source threshold and relies on operational constraints (i.e., a control device) to remain an area source may need to keep detailed records on the operation of the process and control device, perhaps through parameter or other monitoring. If the facility is required to obtain a title V permit for some other reason (e.g., the facility is a major source of VOC), the requirements to demonstrate area source status must be specified in the permit.

Owners or operators of area sources subject to subpart KK, but not subject to any other title V requirement, are not required to obtain a title V permit. Each owner or operator of a facility that committed to being an area source under this rule was required to submit an initial notification of his or her area source status by May 30, 1998.

2.1.4.2 What if the Owner or Operator Exceeds Area Source HAP Thresholds for Subpart KK?

If the owner or operator of a facility exceeds the area source HAP thresholds for either use or emissions for even one rolling 12-month period, the facility will then be considered a major source of HAP and its owner or operator will be subject to the full requirements of the rule. Facilities exceeding the HAP use thresholds may avoid this reclassification if their owners or operators first obtain and comply with limits that keep the potential to emit for HAPs below major source levels.

To retain the flexibility to become a major source for HAPs and subject to subpart KK without requiring a permit revision, a facility owner or operator may include a mechanism for this purpose in the permit as an alternative operating scenario. The permit would include one or more alternative operating scenarios detailing how the MACT standard would apply when the facility becomes a major source of HAP and which compliance option(s) the facility would implement. In addition, all applicable provisions that may include installation of monitoring equipment must be met before exceeding the HAP thresholds. Such an approach would enable a facility owner or operator to retain flexibility in the amount of HAPs used, especially those facilities whose HAP emissions are very near the major source threshold.

2.1.4.3 What If an Owner or Operator has a Minor Source Subject to Subpart N?

Owners or operators of printing facilities that are minor sources but include chrome plating operations for preparing cylinders may be subject to title V based on applicability of the NESHAP for "Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks" (40 CFR part 63, subpart N). Subpart N applies to chrome operations regardless of size. Subpart N includes a permanent exemption from title V for owners or operators of minor sources that are decorative chromium electroplating or chromium anodizing operations that use fume suppressants to limit emissions or use trivalent chromium with a wetting agent in decorative electroplating. Subpart N also allowed you to delay submission of title V applications until as late as December 9, 2000, for minor sources.

2.1.5 NSPS Sources

Like NESHAP, our NSPS can also trigger the applicability of title V to owners or operators of minor sources. One NSPS, the "Standard of Performance for the Graphic Arts Industry: Publication Rotogravure Printing" (40 CFR part 60, subpart QQ), applies to publication printing. Since October 28, 1980, the installation of any new or reconstructed publication rotogravure press, regardless of size, triggers subpart QQ. Thus, a publication printing operation that is a minor source based on potential emissions, may still be required to obtain a title V permit if its owner or operator installed a new or reconstructed rotogravure press since 1980. A second NSPS that may apply to owners or operators printing facilities is "Standards of Performance for Flexible Vinyl and Urethane Coating and Printing" (40 CFR part 60, subpart FFF). The installation of a new or reconstructed rotogravure printing line used to print or coat flexible vinyl or urethane products since January 18, 1983, is subject to this standard. At the present time, no other printing technologies are subject to NSPS requirements.

2.2 HOW CAN OWNERS OR OPERATORS OF NEW SOURCES BE EXEMPT FROM TITLE V?

Owners or operators of existing sources could have become exempt from title V by reducing the potential emissions below major source thresholds before May 30, 1998. Owners or operators of new sources can be exempt from title V by ensuring the potential emissions remain below major source thresholds. The requirements that limit the emissions from the facility to minor source status must be federally enforceable. Federal enforceability can be achieved through permit programs, including permits issued under FESOP or minor source NSR program approved in the SIP, or rulemaking under federally approved provisions of the SIP. Source, or source category-specific rules may also serve as SIP revisions to limit potential emissions.

In April 1998, we issued a policy memorandum entitled, "Potential to Emit Guidance for Specific Source Categories," (EPA, 1998a). In that memorandum, we calculated cutoffs that printing sector source owners or operators could use as enforceable limitations on their operations to achieve minor source status. Examples for various printing sectors are presented in the memorandum attachment entitled "Technical Support Document for Potential to Emit Guidance Memo. Documentation of Emission Calculations." For categories with annual limits, the established thresholds are not to be

exceeded during any rolling 12-month period. While this time period may appear to vary from our policy as outlined in a June 1989 policy memorandum, "Guidance on Limiting Potential to Emit in New Source Permitting," (that advocates shorter time periods (EPA, 1989)), only the purpose behind the period differs. The April 1998 guidance is for applicability purposes only; it is not intended to address setting short-term NAAQS limits. Such limits are part of your minor source NSR programs, that are designed to protect air quality in a given area.

2.2.1 What are the MRRT Requirements for Maintaining Exempt Source Status?

Potential emission limitations to create minor sources must be enforceable in a practical manner. Practical enforceability is achieved through establishing monitoring, recordkeeping, and reporting requirements. Since major source criteria are based on annual emissions, your permits should include procedures that provide for monthly accounting of emissions and the calculation of 12-month rolling totals.

For printing facilities, this necessitates tracking the quantity, physical properties, and composition of all materials consumed in printing, cleaning, and support activities which lead to the generation of VOC or HAP emissions and all VOC/HAP containing waste. The quantities of materials, their composition, and properties must be determined by recognized methods. This includes the use of calibrated scales and meters, VOC composition data determined by Federal Reference Method 24 or 24A or equivalent analyses, and/or formulation data provided by suppliers. If capture and control systems are required to achieve the minor source limitations, performance tests and operating parameter monitoring may be needed to determine the overall control efficiency on a continuous basis. The approach used by a facility should be documented for your review. The margin between the facility's actual emissions and the major source threshold can be used to determine sufficient monitoring and recordkeeping requirements.

For example, for sources who maintain their actual emissions below 50 percent of the major source threshold, we support the use of less rigorous monitoring and recordkeeping requirements. You may want to allow sources to rely on formulation data only in order to determine VOC content. Monthly, or possibly quarterly tracking of inventories may be adequate to determine material use. Daily checks coupled with records of parameter monitoring data would serve to document capture and control system performance. An annual calibration of monitoring equipment may be sufficient.

In contract, for synthetic minor sources whose actual emissions are over 50 percent of the major source threshold, the stringency of monitoring requirements should increase as the source's actual emissions approach the major source thresholds. For sources whose actual emissions are expected to exceed 75 to 80 percent of the major source thresholds, you should consider the need for continuous parameter monitoring and recordkeeping, monthly tracking and daily proration of material use, and VOC testing for high-volume printing materials that lack adequate formulation information.

2.3 WHAT ARE THE APPLICABLE REQUIREMENTS?

As a permit writer, you are expected to incorporate all federally-enforceable requirements that apply to each source for controlling air pollution into a title V operating permit. These requirements may have originated from one or more Clean Air Act program areas. These program areas include:

- Control of existing air pollution sources by SIPs, often requiring the use of RACT for significant emitters;
- Preconstruction review of new and modified major sources to assure appropriate air quality impacts and the use of best available control technology (BACT) in attainment areas and lowest achievable emission rate (LAER) technologies in nonattainment areas;
- Federal NSPS for certain new or reconstructed emissions units (affected facilities);
- Federal NESHAP requiring use of MACT at certain new and existing affected sources to control toxic air pollutants;
- CAM rule; and
- Title V monitoring, recordkeeping, and reporting requirements.

Note that the CAM rule will not apply to rules promulgated after passage of the Clean Air Act Amendments of 1990, since those rules will or do contain monitoring that provides data sufficient to provide a reasonable assurance of compliance with the rules. Also, note that the monitoring required by newly-promulgated rules may suffice for those units also subject to the CAM rule. See the streamlining discussion in Chapter 6 for more information.

Requirements in each program area include provisions to assure practical enforceability. The applicable requirements typically include:

- **limits on emissions** through maximum or minimum constraints on mass emissions rates, a material throughput, input material properties, capture efficiency, and/or control efficiency
- **work practice standards** that stipulate the use of control equipment, material handling practices, employee training, etc.
- **testing** of performance of capture and control systems and the quality and composition of materials consumed
- **monitoring** emissions or operating parameters representative of capture and control efficiency

- **recordkeeping** of data on material usage, properties, and operating parameters

- **reporting** of results of performance tests and emissions

Owners or operators of facilities may be subject to requirements stemming from more than one program area. The specific provisions in each program area can vary. It is important that you recognize the commonalities and differences in the requirements of each program area in developing the title V permit. Opportunities may exist for simplifying and streamlining the different requirements during permit development which will benefit both you and the permit applicant.

2.3.1 How Can Applicable Requirements be Placed in Permits?

To assist in understanding the differences in requirements by program area, we present examples of applicable requirements for the major printing technologies. The printing technologies for which applicable requirements are presented include publication rotogravure, packaging rotogravure, and wide-web flexographic. Tables 2-2, B-1, and B-2 summarize potentially applicable requirements for packaging rotogravure and wide-web flexographic sources that use oxiders (incinerators), solvent recovery, and compliant inks/coatings, respectively. Table B-3 summarizes the typical applicable requirements for publication rotogravure facilities that employ solvent recovery and compliant inks/coatings, respectively. The examples presented in the tables were identified as the most common scenarios by industry representatives.

Typical applicable requirements for heatset web offset lithography, non-heatset web offset lithography, and screen printing are not summarized. These printing sectors are not subject to a federal MACT or NSPS standard, and RACT rules for these sectors may differ between States or do not exist in certain States. You should check your regulations to verify the presence of any State RACT rules or State-only requirements that apply to these printing processes.

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Emissions / Operating Limits	C 90% VOC destruction efficiency C 65% overall control efficiency C Generally applies to emissions from the application of inks and coatings by each individual printing press C May apply hourly or daily with compliance based on performance test and monitoring of control system temperature(s) C May require parameter monitoring for capture and control systems including development and submittal of compliance assurance monitoring (CAM) plan with the initial and/or renewal title V application [§64.1 - §64.10]	C Requirements generally follow SIP-RACT requirements with same or greater stringency for control of emissions C Ranging from 70% to 98% overall control efficiency C May include mass VOC emission limits and/or mass VOC usage limits to hold potential emissions below permitting thresholds C Generally applies to emissions from the application of inks and coatings by the individual new or modified press or collectively by a group of new/modified presses controlled by the same oxidizer C Requirements established through preconstruction review	C No additional requirements	C Applies to new rotogravure printing and/or coating of flexible (sheet or web) vinyl or urethane products [§60.580(a)] C Applies to emissions from the application of inks and coatings by each new rotogravure printing line constructed after 1/18/83 [§60.580(b)] C 85% overall VOC control of each affected facility [§60.582(a)(2)]	C New/reconstructed major sources must submit application for preconstruction review by EPA, or by State program that has been delegated MACT standard enforcement responsibilities [§63.5]	C Applies to major sources of HAPs with rotogravure and wide-web flexographic presses if presses apply greater than 500 kg/month of inks & coatings or 400 kg/month of organic HAP [§63.820(a)(2) & §63.821(b)] C Applies to all roto./flexo. presses (together) plus other optional equipment [§63.821(a)(2)] C Overall organic HAP control efficiency of at least 95% each month, *or* C Emission rate of no more than 0.2 kg organic HAP per kg. solids applied, monthly average, as-applied basis, *or* C Emission rate of no more than 0.04 kg organic HAP per kg material applied, monthly average, as-applied basis C or option based on weighted calculations between alternatives [§63.825(7), (8), (9), or (10)]

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Other - Work Practice Standards	C Operation & maintenance of control devices and monitors according to manufacturer recommendations	C Same as SIP-RACT requirements	C Operate and maintain affected facility and control equipment consistent with good air pollution control practices [§60.11(d)]	C Same as given in subpart A	C Operate and maintain source and control equipment consistent with good air pollution control practices [§63.6(e)(1)] C Develop and implement a written start-up, shutdown, and malfunction (SSM) plan for affected source and control equipment [§63.6(e)(3)]	Same as given in subpart A

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Testing	C Initial compliance test of oxidizer destruction efficiency and capture efficiency C Preparation and approval of testing protocol generally required in advance of test C Testing generally required at conditions approaching maximum operating rates C May require periodic re-testing	C Same as SIP-RACT requirements	C Conduct performance test 60 - 180 days after start-up in accordance with test methods and procedures in applicable standard C Provide at least 30 days notice of scheduled test date [§60.8] C Continuous monitoring systems (CMS) must be subject to a performance evaluation during performance test [§60.13(c)]	C Performance test under, continuous normal operating conditions consisting of 3 runs 30 minutes each measuring destruction and capture efficiency [§60.583(d)] C VOC measurements for destruction efficiency based on M25A [§60.583(a)] C All fugitive VOC emissions shall be captured and vented through stacks suitable for measurement during test [§60.583(d)(4)] C *Thermal* oxidizer test shall determine average oxidizer exhaust temperature [§60.584(b)] C *Catalytic* oxidizer test shall determine average up- and down-stream temperatures for the catalyst bed [§60.584(c)]	C Initial performance test required within 180 days of the effective date of standard or after initial start-up of new unit [§63.7(a)] C Notification of test at least 60 days in advance [§63.7(b)] C Development and, if requested, submittal of site-specific test plan at least 60 days in advance of test [§63.7(c)] C Performance test shall be conducted under normal operating conditions [§63.7(e)] C CMS Performance Evaluations for temperature monitors with initial test [§63.8(e)]	C Initial performance test under normal operating conditions consisting of runs (1 hr. min. each) [§63.827(d)(1)(vii)] C VOC measurements for destruction based on M2 or 25A [§63.827(d)(1)(vi)] C Capture efficiency determined by Procedure T (M204) [§63.827(e)(1)] C *Thermal* oxidizer test shal determine minimum combustion temperature [§63.827(d)(3)] C *Catalytic* oxidizer test shall determine minimum gas temperature upstrean of the catalyst bed [§63.827(d)(3)]

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Monitoring	C Oxidizer temperature to confirm destruction efficiency C May require monitoring of parameter for capture efficiency such as enclosure differential pressure	• Same as SIP-RACT requirements	C Required CMS subject to the applicable performance specifications in Appendix B and quality assurance procedures in Appendix F [§60.13(a)] C Monitors installed and operational prior to time of performance test consistent with manufacturer's recommendations for installation, operation, and calibration [§60.13(b)] C Record four or more data points equally spaced over each hour; do not include data recorded during breakdowns, repairs, calibrations, etc. [§60.13(h)]	C For *thermal* oxidizer, install, operate, maintain, and calibrate annually continuous monitor and recorder of temperature of control device exhaust gas; accuracy of ±0.75% of temperature measured or ±2.5EC, whichever is greater [§60.584(b)] C For *catalytic* oxidizer, install, operate, maintain, and calibrate annually continuous monitors and recorders of temperatures upstream and downstream of catalyst bed; accuracy of ±0.75% of temperature measured or ±2.5EC, whichever is greater [§60.584(c)]	C Operate and maintain CMS consistent with good air pollution control practices, in accordance with manufacturer's specifications for installation, operation and calibration [§63.8(c)(1) -(c)(3)]	C For *thermal oxidizer* install, operate, maintain, and calibrate every 3 months continuous monitor and recorder of combustion zone temperature; accuracy of ±1% of temperature measured or ±1EC, whichever is greater [§63.828(a)(2)(ii) & (a)(4)(I)] C For *catalytic* oxidizer, install, operate, maintain, and calibrate every 3 months continuous monitor and recorder of the catalyst bed inlet temperatures; accuracy o ±1% of temperature measured or ±1EC, whichever is greater [§63.828(a)(2)(ii) & (a)(4)(ii)] C Monitor capture efficiency parameter in accordance with capture efficiency monitoring pla [§63.828(a)(5)]

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Recordkeeping	C Oxidizer temperature monitoring data C Manufacturer of oxidizers recommended operation and maintenance procedures C Preventative maintenance and/or malfunction prevention and abatement plan C Maintenance logs for control, capture, and monitoring equipment C Material properties and usage data, source operation data, and calculations to support compliance demonstrations C Performance test results	C Same as SIP-RACT requirements	C Occurrence and duration of any SSM of the affected facility; any malfunction of the control system; or any periods inoperative continuous monitors [§60.7(b)] C Records of all CMS and device measurements, performance evaluations, calibration checks, and adjustments and maintenance performed [§60.7(f)]	C For *thermal* oxidizer, average exhaust gas temperature during the initial test; monitored temperature of the exhaust gas; 3-hour average temperature for periods when the exhaust temperature is more than 28°C less than the initial test average temperature [§60.584(b)(2)] C For *catalytic* oxidizer, the initial test average catalyst bed upstream and downstream temperature; the monitored upstream/downstream temperature; periods when 3-hour average temperature upstream is more than 28°C less than the downstream temperature in the initial or less than 80% of the average initial test temperature difference [§60.584(c)(2)] C Time periods of affected facility	C Written SSM plan for the source, control system, and monitoring system [§63.6(e)(3)(v)] C Records showing consistency of actions with SSM plan [§63.6(e)(3)(iii) & §63.10(b)(2)] C Records showing any actions inconsistent with SSM Plan [§63.6(e)(3)(iv)] C Written CMS quality control program [§63.8(d)] C Records of data from CMS measurements, audits, calibrations, and malfunctions [§63.10(b)(2) & §63.10(c)] C Records of all reports and notifications [§63.10(b)] C Records of each applicability determination [§63.10(b)(3)]	C Record of the operating conditions during the initial test including the average of the minimum temperature (exhaust for *thermal* and catalyst bed inlet for *catalytic* oxidizers) [§63.827(d)(2) & (d)(3)] C Monthly summaries of capture efficiency parameter data as rolling 3-hr averages [§63.829(a)(1)] C Monthly summaries of oxidizer temperature monitoring data as rolling 3-hr averages based on a least 15 minute readings [§63.829(a)(1)] C As well as items in subpart A

Table 2-2. POTENTIALLY APPLICABLE REQUIREMENTS
Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Representative SIP-RACT (all subject sources)	Example NSR Requirements	NSPS (part 60)		MACT (part 63)	
			Subpart A (General Provisions)	Subpart FFF	Subpart A (General Provisions)	Subpart KK
Reporting	C Periodic Compliance Reports C Performance test protocol C Test notification C Test results report C Annual VOC emission statements	C Same as SIP-RACT requirements	C Notification of: commencement of construction, start-up, and CMS performance evaluation [§60.7(a)] C Semiannual excess emissions and monitoring system performance report [§60.7(c) & 7(d)] C Initial performance test report [§60.8(a)] C CMS performance evaluation report for initial performance test [§60.13(b)(2)]	C Performance test data and results [§60.585(a)] C Semiannual reports of recorded drops in oxidizer temperature below specified recordkeeping range [§60.585(b)] C As well as items in subpart A	C Initial notification of standard applicability [§63.9(b)] C SSM plan submittal, if requested [§63.6(e)(3)(v)] C Notification of initial performance test and submittal of site-specific test plan if requested [§63.7(b), 7(c) & 9(e)] C Submittal of test report [§63.7(g)] C Semiannual SSM reports [§63.10(d)(5)(I)] C Reports on operation inconsistencies with SSM plan [§63.6(e)(3)(iv)] C Notification of CMS performance evaluation, submittal of evaluation plan and evaluation results [§63.8(e), 9(g)(1) & 10(e)(2)] C Notification of Compliance Status Report [§63.9(h)] C Semiannual excess emissions and CMS performance report	C Capture Compliance Monitoring Plan for submittal with the Notification of Compliance Status Report [§63.9(h) & §63.828(a)(5)(I)] C As well as items in subpart A

2.3.2 How Can Printing Equipment be Described in a Title V Permit?

The title V permit must describe the emissions units in sufficient detail to determine the applicability of all requirements and provide the basis for calculating emissions. The information must also allow your inspectors to match each individual unit observed during a plant visit with the permit's description for that unit. All emissions units observed during an inspection should be either in the site inventory or the insignificant activity list (unless added after permit issuance through a new source construction permit or as an insignificant source). The language identifying the equipment in the site inventory should be for descriptive purposes, and not necessarily serve as enforceable in terms of defining source capacities and design limitations.

Permit applications can identify each operation with a unique emissions unit number. The applications can include information that identifies the function of the emissions unit, the type of equipment, the manufacturer of the equipment, a model number and/or serial number, raw materials used, finished products produced, the design or maximum hourly throughput and/or production rates, and actual expected annual throughput and or/production rates. If the operation of the unit is associated with an air pollution control device, the application can identify the control device in similar terms (type, function, manufacturer, model number, serial number, flowrate, etc.). For printing, press terms can be included that define the throughput capability of the press. These terms include web width or sheet size, number of stations for applying inks and/or coatings, the maximum line speed (linear feet or sheets per minute) and/or impressions per hour. If the press is vented to a control system, the capture and control device should be included in the description.

Information from the application provides the basis for describing the emissions unit in the permit. All of the description in the permit application need not be repeated in the permit. For printing facilities, example descriptions of printing equipment that could be used in a title V permit are presented below.

- Emissions Unit XX - 8-Station 44 Inch Converse Rotogravure Press with maximum operating speed of 1,000 feet per minute. Press is located in a permanent total enclosure vented to a Cleanox Catalytic Oxidizer with a 20,000 standard cubic feet per minute (scfm) capacity.

- Emissions Unit YY - 10-Station 15 inch Coloright Rotogravure Press with a maximum operating speed of 800 feet per minute applying radiation (ultraviolet light) cured inks.

- Emissions Unit ZZ - 6-Station 20 Inch Gemini Web Heatset Lithographic Press, with single Dryer, operating at a maximum of 40,000 impressions per hour. Dryer provides 100 percent capture and is vented to 10,000 scfm Burnex Thermal Oxidizer.

In each description, the printing technology, the press manufacturer, the size of the press and the control system manufacturer and capacity is identified allowing for the identification of the unit and determination of applicability of specific graphic arts requirements (rotogravure versus offset; control system versus compliant coatings, subpart KK). Again, the key principle is that equipment be

described in detail sufficient to be linked to applicable requirements and to allow for identification and confirmation by an inspector.

2.3.3 Insignificant Units and Activities

Owners and operators of printing facilities in some jurisdictions have expended considerable effort justifying that a few units or activities qualify as insignificant for title V purposes. We are aware of confusion relative to the different contexts in which insignificant activities have been defined. Moreover, we believe the term "insignificant activity" has not always been used consistently, and may be subject to differing interpretations between you and source owners or operators. We have provided previous guidance on addressing insignificant activities in White Paper Number 1 (WPN1) and White Paper Number 2 (WPN2) (EPA, 1995 and EPA, 1996). In order to further clarify our view, we consider the following classifications of insignificant activities:

- Activities, as defined by your part 70 regulations, that are not subject to any applicable requirement;
- Activities that are exempt from an applicable requirement, but for which a source owner or operator needs to demonstrate in a title V permit (e.g., through documentation and records) that the activity falls below applicable limit; and
- Activities whose emissions are demonstrated to fall below your potential to emit de minimis criteria.

1) For insignificant activities identified by your part 70 program, we suggest that the permit need only list these insignificant activities as a class of activities. Unless otherwise required by your regulations, you and the owner or operator need only develop an updated list of insignificant activities at the time of permit renewal (i.e., every 5 years). Additional inquiries concerning changes in a list of insignificant activities need not be made by you during this 5-year period. The list could also be updated if the permit is reopened for another purpose before renewal.

Examples of activities in the printing industry you may consider insignificant include:

- Propane-powered fork trucks;
- Roof-top heating units;
- Natural-gas consumed in a process (e.g., dryers);
- Aerosol cans;
- Pad printing;
- Emergency generators;
- Pre-press equipment;
  - < photoprocessing, typesetting, or imagesetting equipment;
  - < roofing systems utilizing water-based, ink jet, dry toner, or dye sublimation or proof press designed to evaluate product quality;
  - < platemaking equipment or screen preparation activities utilizing water-based developing solutions;
  - < equipment used to make blueprints;

- Cold cleaning manual parts washers with less than 10 square feet of surface area;
- Dry toner or other digital presses that apply water-based or low VOC containing inks that do not containing more than 5 percent VOC content by weight;
- Substrate finishing activities which involve paper folding, cutting, folding, trimming, die cutting, embossing, foil stamping, drilling, saddle stitching, sewing, perfect binding, vacuum forming or other activities that do not generate VOCs and whose particulate emissions are vented inside the facility;
- Adhesive application activity involving hot melt or water-based or low VOC adhesives that do not containing more than 5 percent VOC content by weight; and
- Pneumatic system for collecting paper/film/paperboard scrap from cutting operations.

2) Insignificant activities may also refer to activities that are exempt from applicable requirements, but for which facility owners or operators are required by you to demonstrate through recordkeeping or monitoring that the unit or activity is below the applicable limit (or is exempt).

A facility owner or operator may be spending considerable time preparing documentation to show that an insignificant activity or unit is exempt and will remain exempt. An activity or unit that has been treated as exempt prior to the onset of the title V program may now have to re-demonstrate in its part 70 permit that it remains below an applicable limit. While such approaches may be appropriate under a certain set of circumstances, in many cases this added rigor provides minimal benefit. For an example of too much rigor for a printer's insignificant activities, consider a printer with a title V permit being required to record on a daily basis the amount of natural gas consumed by roof top heating units with a firing rate of 0.04 million Btu/hour, in addition to record the average hourly fuel consumption for dryers on screen printing presses rated at 0.2 million Btu/hour, and to record the amount of solvent used per day, hours of operation, density and VOC content of the solvent, and the average daily VOC emissions for a 30-gallon parts washer.

We believe an insignificant unit or activity that has been shown through calculations under worst case or maximum throughput conditions to be below the threshold for an applicable requirement, should not be subject to title V monitoring. Records of the one-time calculations demonstrating exemption from the applicable requirement at worst case conditions should be submitted with the facility's permit application and maintained in the plant's files and be used for compliance demonstration purposes.

3) In cases where you have established a potential to emit de minimis threshold, you may require that records be kept to show that the emissions remain below the exemption level. One way to reasonably assure that each identified de minimis unit or activity within a facility remains below the exemption level is to list the de minimis units or activities in the title V permit. An insignificant unit or activity that has been shown through calculations under worst case conditions or maximum throughput to be below the threshold for an applicable requirement should not be subject to ongoing title V monitoring (e.g., no monitoring for a boiler with a rated heat input less than xx mmBtu/hr). Records of the one-time calculations demonstrating exemption from the applicable requirement at worst case conditions should be maintained in the owner's or operator's files and used for compliance demonstration purposes. If the potential to exceed an exemption level exists, and if a relationship has been established between throughput and emissions, you may need to require monthly tracking of a rolling 12-month throughput.

CHAPTER 3
MONITORING AND PRACTICAL ENFORCEABILITY

The monitoring provisions in title V permits establish the frame work for demonstrating continuous compliance consistent with the facility's control strategy. The regulations concerning title V permit content mention monitoring in two places: part 70, section 70.6(a)(3)(i)(B), requires monitoring to be added if applicable requirements lack recurring monitoring or testing and part 70, section 70.6(c)(1) contains provisions for all title V permits to contain monitoring sufficient to provide data that give a reasonable assurance of compliance with all applicable requirements. We also established CAM requirements under 40 CFR part 64 to provide a reasonable assurance of compliance with CAA requirements for large emissions units that rely on active control devices to meet applicable requirements. In August 1998, we issued a CAM Technical Guidance Document (TGD), available on our website at http://www.epa.gov/ttn/emc/cam, to describe how to determine if the CAM rule applies to a source owner or operator, and if so, how to select and document monitoring that satisfies CAM requirements.

Just as clarifications concerning monitoring for insignificant units and activities are necessary, we believe clarifications concerning title V monitoring, especially compliance assurance and opacity monitoring, are appropriate. By way of background, source owners or operators are to prepare and submit title V applications that will serve as your basis for title V permit conditions. With respect to monitoring, our Emissions Measurement Center (EMC) - the group that provides technical expertise and guidance for implementing monitoring and testing requirements that assure compliance - supports the following components for the monitoring portion of title V permit applications:

- A unique identifier for each unit or add-on control device;
- Each applicable requirement for each unit or add-on control device;
- The monitoring approach for each applicable requirement;
- A background discussion on the monitoring approach; and
- The justification for the selection of the monitoring approach, including indicators and indicator ranges for approaches using parameters.

You should include the first three components in title V permits; the last two components may reside in the permit application, off-permit, in a supplement to the permit, or in a technical support document for the permit.

We believe with respect to the second component, the monitoring approach should specify:

(1) the monitoring methods and location;
(2) the monitoring frequency;
(3) the averaging period;

(4) recordkeeping; and
(5) quality assurance (QA) and quality control (QC) techniques.

We suggest that you review and understand each of the components of the monitoring approach with the facility, prior to permit issuance. For instance, with respect to the monitoring frequency you should know how the printer intends to select the value to be reported for each period that data are required. Since a thermocouple can provide near instantaneous readings, you may expect to see a myriad of ways to produce one value to report in a 15-minute period. One printer could average all the values obtained during the period while another printer might provide the lowest value obtained during the period. Absent a specific rule requirement, we suggest you and the printer address this.

In this section, we present examples of acceptable title V monitoring for the following general categories of emissions units:

- Emissions units using add-on devices for VOC and/or HAP control;
- Emissions units using compliant coatings for VOC and/or HAP control; and
- Emissions units subject to State opacity requirements.

In addition, examples of CAM protocols are presented in Appendix C for those emissions units at major sources subject to CAM requirements. These examples are presented as guidance. As a State permit writer, you may have circumstances where a more stringent monitoring protocol is needed.

3.1 WHAT IS ACCEPTABLE TITLE V MONITORING FOR SOURCE OWNERS OR OPERATORS WHOSE UNITS USE ADD-ON DEVICES FOR VOC CONTROL?

Source owners or operators may opt to install and operate an add-on control device to achieve a specified VOC or HAP limit. Smaller printers who rely on a control device may not be subject to the CAM rule, but title V monitoring is still relevant.

3.1.1 Title V Monitoring for Units Whose Potential to Emit VOC is Below the Major Source Threshold

Printers whose potential VOC emissions are less than major source thresholds are likely to conduct parametric monitoring (e.g., temperature monitoring of a thermal oxidizer) to satisfy title V monitoring requirements. Printers who elect a parametric monitoring approach should, at a minimum, include in their permit applications the following performance criteria for each parameter to be monitored:

- The numerical indicator range or ranges for the selected parameter
- Data Reliability
  - Sensor type and location specifications
  - Installation requirements (if applicable)
  - Minimum acceptable accuracy
  - How data will be recorded

- Frequency of measurements
- Averaging period
- QA/QC requirements

Printers should select the parameter indicator range to provide a reasonable assurance that the emissions unit is in compliance with the applicable requirement when operated within that range. Wherever possible, printers should support the proposed range by documenting that the emissions unit was in compliance with the emission limitation when operating within the selected indicator range. Printers are not required to establish a range such that an excursion from that range will prove noncompliance with the associated limit. On the contrary, we prefer printers to select a range so that if an endpoint is crossed, printers have time to initiate and complete corrective action before the major source threshold is crossed. While emissions data with concurrent parameter measurements are key in establishing indicator ranges, printers may use other relevant information, such as engineering assessments, historical monitoring data, and vendor data. Appendix C contains VOC emissions capture and control parametric monitoring approaches for units whose potential to emit VOC emissions are less than the major source threshold.

3.1.2 Title V and Presumptively Acceptable Compliance Assurance Monitoring for Units Whose Potential to Emit VOC Meets or Exceeds the Major Source Threshold

Printers whose potential to emit VOC emissions meets or exceeds the major source threshold may choose to use instruments such as VOC CEMS or FTIR spectroscopy to measure VOC emissions directly. Printers may also rely on parametric monitoring of capture and control devices - coupled with inspections and ongoing testing - to provide a reasonable assurance of compliance with their units' emissions limits. As mentioned earlier, we provide examples of "presumptively acceptable" monitoring for "capture and control" air pollution control systems in Appendix C. The protocols in this appendix provide monitoring approaches that may be used to comply with CAM or with title V monitoring requirements. The CAM protocols apply to those printing sources subject to the Printing and Publishing MACT, and the draft Paper and Other Web Coating MACT. However, printing sources not covered by these standards may use these protocols to address their CAM and title V monitoring requirements.

3.2 WHAT IS ACCEPTABLE TITLE V MONITORING FOR PRINTERS WHO TRACK COATING PROPERTIES AND USAGE?

Printers must monitor material composition and usage over specified time periods of all materials consumed to demonstrate compliance with applicable limits. This is true for all operations: those relying on compliant coatings, those using control systems, and those demonstrating compliance through a combination of controls and application of specific coating formulations.

3.2.1 How Does a Printer Monitor or Track Material Consumption?

The printing industry uses a variety of materials including inks, coatings, solvents, and additives to print on a number of substrates, such as paper and paperboard, plastic films, and foils. Each material can have different properties (VOC content, density, etc.) which must be accounted for in determining emissions. Printers receive and dispense materials from a variety of containers including pails, drums, totes, and bulk storage vessels. Press utilization is typically tracked by the number of impressions printed, by the press operating rate, and/or duration of press operation. Facilities generally track production by each individual press.

Printing facilities utilize different approaches to monitor material consumption. Usage of individual materials may be tracked by press and by printing project or job, or by containers issued or consumed, or by changes in periodic inventories. Periodic meter readings are often used to track bulk material usage. Any one facility may use one or more of these approaches to track material consumption. Materials issued and returned from individual press jobs are generally accounted for by weight. Bulk materials are generally accounted for by volume.

3.2.2 What are Our General Principles for Measuring Material Usage?

1. Current practices for measuring usage are generally acceptable. Presumptively, title V does not require new, more rigorous measurement techniques. Frequent, short-term measurements are not necessarily superior to simpler, broader measurement approaches required by some applicable requirements (e.g., subpart KK). In fact, subpart KK has been intentionally structured to allow such broad measurement approaches.

2. Measurement procedures are subject to your approval. You and the facility must come to a common understanding of the specific measurement procedures that a facility intends to use. This understanding may be documented in the permit itself, in the permit application, or in a separate monitoring plan created specifically for this purpose. For example, for subpart KK, to maximize compliance flexibility, the facility should include as many subpart KK compliance options and alternative measurement procedures as it reasonably anticipates it may wish to use.

3. The permit must contain a general description of the measurement approach. Title V of the Clean Air Act requires the permit to assure compliance with all applicable requirements. Because measuring the amount of materials used at the facility is crucial to determining compliance for each month, we believe that the permit must describe the measurement procedures to assure compliance with any applicable requirement. A general description of the data collection approach is sufficient, provided that the permit includes a duty for the facility to prepare and implement a more detailed monitoring plan. (The title V permit should require your approval of the detailed monitoring plan.) By way of example, we would suggest an approach that requires minimal measurement of VOC or HAP containing materials. Under such an approach, a printer would need to demonstrate via ongoing measurement that any usage of materials with VOC or HAP content above permitted levels is offset by usage of materials with VOC or HAP content below permitted levels and show via formulation data that all other materials used had HAP or VOC content below permitted

levels. This offset approach, in which the printer shows compliance with an average VOC or HAP limit, minimizes the accounting paperwork but assures compliance with the limit.

4. The specifics of the measurement procedures may reside in a supplemental monitoring plan (either as part of the permit application or as a separate plan). Using a monitoring plan that is not in the permit has a number of advantages. First, the volume of the permit is reduced. Second, revisions can be made to the plan (subject to your approval) without triggering a title V permit revision. Finally, the procedures are clearly laid out, available to you, facility personnel, the public, and us.

5. The margin of compliance is a significant factor in selecting the measurement approach. A large margin of compliance allows a facility to use a less comprehensive measurement approach, while a narrow margin requires a more comprehensive measurement approach. The measurement approach must be accurate enough for each month's compliance status to be clearly known. The margin of compliance also bears on the level of QA/QC that is necessary. A wide compliance margin may call for less rigorous QA/QC. Tighter QA/QC is appropriate where the compliance margin is slim.

3.2.3 Example Title V Permit Terms and Conditions - Wide-Web Flexographic Press Using Compliant Coatings

An example of the types of information that should appear in the permit is presented in Table 3-1. Note that this example addresses only subpart KK. Again, the actual approach placed in the permit will vary and will presumptively follow the historical approach taken by the printer to the extent approved by you. (This is not intended as actual permit language, which remains to be developed.) The example table addresses a wide-web flexographic source that plans to use a monthly inventory, coupled with purchase records, to determine materials usage for each month. The facility wishes to maintain the option of using any of the six compliant coating compliance options.

Other applicable requirements such as RACT rules, NSR permit limits, and VOC emissions caps should be addressed separately, unless these requirements can be streamlined with the subpart KK requirements. Where shorter term limits more frequent than monthly (e.g., hourly or daily) are applicable and not easily amenable for streamlining consistent with WPN2, then presumptively data collection on a project basis will be necessary (EPA, 1996). Longer term values may be averaged over the hours of operation for the operating unit to develop an hourly value, where hourly limits apply. For daily limits, facilities have the option to track material usage either per day or per job or project. If the project runs more than a day, printers may need to allocate the project totals to the individual days based on hours of operation, depending on their margin for compliance on those days.

A printer must prepare a detailed monitoring plan and submit the plan to you for approval. The printer must then conduct monitoring according to the procedures in the approved plan.

3.3 WHAT CONSTITUTES SUFFICIENT OPACITY MONITORING?

Opacity monitoring is a requirement that is not treated consistently among you and other permitting authorities. The stringency of the monitoring approach chosen by you should consider each emissions unit's potential to cause visible emissions (VE), which are a subset of particulate emissions. This section clarifies compliance demonstration requirements for opacity monitoring, and proposes that you consider eliminating opacity monitoring for sources that have little or no potential to contribute to VE or particulate emissions (e.g., gas-fired boilers, thermal oxidizers), consistent with WPN2 procedures (EPA, 1996).

Table 3-1. Example Compliant Coatings Monitoring Approach For Subpart KK HAP Limits - Wide Web Flexographic Press

Applicable Requirement	40 CFR part 63, subpart KK limit on HAP emissions from wide-web flexographic printing presses [§ 63.825(b)]
General Monitoring Approach	Collect data for each month on the amount of each material applied on the presses and on the HAP content of each material. Determine compliance from these data for each month using one of six options in subpart KK.
Monitoring Methods and Location	Collect data on current inventory of materials in storage at the facility. Any equation or replicable procedure relied on to make decisions concerning compliance should be incorporated in the permit.[1] Collect purchase records for the facility. Collect data on HAP and solids content (such as certified product data sheets [CPDS] or equivalent from the supplier or test data) for each material. Retain data on HAP and solids content in a permanent file. Determine compliance for each month using any of six compliance options in 40 CFR 63.825(b)(1) through (6).
Indicator Range	Not applicable; compliance determined directly for each month by one of the six compliant coating compliance options in 40 CFR 63.825(b)(1) through (6).
Data Collection Frequency	At least monthly.
Averaging Period	Monthly for compliance options in 40 CFR 63.825(b)(4) and (5). [The compliant coating compliance options in 40 CFR 63.825(b)(1), (2), (3), and (6) require a compliance determination each month, but do not involve averaging.]
Recordkeeping	All materials usage measurements (including inventory data and purchase records), all materials composition data (including M24/311 data and/or CPDS from suppliers), and documentation of all calculations and results. Record retention and reporting of summary information and deviations are to be performed pursuant to 40 CFR 70.6(a)(3)(ii) and (iii).
QA/QC	Periodic audit of data collection, calculation, and recordkeeping procedures. (Frequency to be agreed upon with you and the facility.) M24/311 QA/QC procedures if those methods are used.
Periodic Testing	Material testing once per permit term to confirm parameter relationship with compliance.

[1]Although not required by subpart KK to be included on-permit, we are asking for this information to be included in the permit in exchange for a flexible permit.

In determining whether opacity monitoring is required, it is important to define which processes have little or no potential to cause VE (and should not be subject to opacity monitoring), and those which may cause VE on an intermittent or continuous basis. For printers whose opacity requirements are not surrogates for particulate matter requirements, we suggest less stringent opacity monitoring requirements for units that have little or no potential to produce VE. If VE are detected for those types of units, the owner/operator of the unit would be required to take corrective action. We support the following guidelines in establishing opacity monitoring requirements:

- No VE monitoring is required for non-lithographic processes (flexo/rotogravure presses), or propane or natural gas-fired equipment without particulate controls, as no VE are expected.

- Semi-annual Method 9 monitoring for VE or other ongoing control device parameter monitoring is expected for non-lithographic processes (flexo/rotogravure presses), or propane or natural gas-fired equipment with particulate controls, or other equipment with particulate controls. If VE are detected for a unit, the printer must take corrective action.

- Daily Method 9 monitoring for VE is expected for lithographic processes, or when use of no. 2 fuel oil as a back-up fuel for process equipment occurs.

- Continuous opacity or Hourly Method 9 monitoring for VE is required when printers use no. 4 and no. 6 fuel oil.

For printers whose opacity requirements are surrogates for particulate matter requirements, as in the case of cyclones used for trimming operations, we support the same guidelines plus concurrent Method 5 testing each time Method 9 testing occurs.

As compliance with the opacity and/or particulate matter limits continues to be demonstrated over time, you may choose to relax the frequency of collecting VE data. Conversely, should an exceedance or numerous deviations occur during a period of relaxed data collection frequency, you should immediately revert to the initial data collection frequency.

3.4 WHAT IS OUR GUIDANCE FOR HANDLING MISSING DATA?

Many printing facilities will be relying on monitoring and recording systems to collect data to demonstrate compliance with emission limitations. Examples include temperature monitoring and recording systems for documenting the maintenance of minimum combustion zone temperatures in an oxidizer or the maximum fountain solution temperature on an offset press. Inevitably, time periods will exist for which facilities will have no recorded data, or the recorded data will be outside of the acceptable range for unavoidable reasons. These data gaps may result from intentional activities, such as maintenance and repair, startup and shutdown conditions, or calibration checks and adjustments, by the facility. These time periods may also result from unintentional activities, where data may be either lost or not recorded as a result of malfunctions with the monitor or the data recorder.

Since these data, or lack of data, may be essential in determining the compliance status of the facility, there needs to be a clear understanding between you and the facility on how and under what conditions missing data can be provided to cover these time periods, and what allowances will be made for unavoidable excursions. This understanding is a critical element of describing the performance expectations of the overall monitoring and recordkeeping system. The specific procedures for handling missing data periods or out of range data do not necessarily need to be written into the title V permit, but they clearly need to be understood at the time the permit is drafted. An off-permit monitoring plan prepared by the facility and approved by you may be the best approach to address these issues. In no case should a generalized approach that allows ad-hoc approvals be acceptable.

The general method for supplying missing data must be conservative, such that any error associated with the method must overstate emissions or understate control system performance. For instance, a printer may propose to use the lowest (or highest) recorded temperature value for the last hour time period before and after a period of missing temperature data to calculate an average value to represent the time period, provided, absent credible evidence to the contrary, the process continued in a steady state fashion during the missing data period. Alternatively, a printer may propose to use a calculated emissions value during a period of missing data where the value would be the average obtained from the last valid reading before the missing data period begins, and the first valid reading after the missing data period ends plus 20 percent, again with assurances of steady state operation. You may find these or similar approaches acceptable to provide lost data.

3.5 HOW DO WE DISTINGUISH DEVIATIONS FROM VIOLATIONS IN REPORTING?

In the part 71 regulations we defined what we mean by a deviation: "...any situation in which an emissions unit fails to meet a permit term or condition. A deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from title V testing, monitoring, or recordkeeping. For a situation lasting more than 24 hours which constitutes a deviation, each 24-hour period is considered a separate deviation. Included in the meaning of deviation are any of the following:

(1) A situation where emissions exceed an emission limitation or standard;

(2) A situation where process or emissions control device parameter values indicate that an emission limitation or standard has not been met;

(3) A situation in which observations or data collected demonstrates noncompliance with an emission limitation or standard or any work practice or operating condition required by the permit;

(4) A situation in which an exceedance or an excursion, as defined in part 64 of this chapter, occurs."[2]

[2] Definition from 40 CFR part 71.6 (a)(3)(iii)(c).

We expect each title V permit to include provisions to require reporting of all deviations. Permits should require prompt reporting of deviations that indicate an exceedance in any emission limiting requirement. Generally, these kinds of deviations are considered violations. All other deviations should be reported in quarterly or semi-annual monitoring reports. For example, a printer's failure to conduct a weekly inspection as required by permit conditions would not indicate, by itself, an emission limit was exceeded. We would expect deviations of this nature to be reported in a quarterly or semi-annual monitoring report. Likewise, we would expect to receive missing monitoring data reports on the same schedule, if the printer generated replacement data based on the method for replacing monitoring data, and if a determination can be made that the target parameter level was met.

You may equate all deviations as violations, even though we do not necessarily link them. Also, you have various interpretations of these terms and may provide criteria establishing a greater margin in distinguishing between a deviation and a violation, and between prompt and periodic reporting. Of course, printers in your jurisdiction will have to abide by your requirements.

CHAPTER 4
TESTING REQUIREMENTS

Chapter 4 describes the issues associated with testing requirements as incorporated into title V permits for printers. Test methods for determining material composition or measuring emissions must be selected with an understanding of each methodology relative to the materials in use and operating conditions.

4.1 WHAT ARE ACCEPTABLE SOURCES OF MATERIAL COMPOSITION DATA?

Printers need VOC and HAP composition data on all consumed materials in order to quantify their emissions. Printers must determine the composition of each material by testing or by formulation data. We define testing as laboratory measurements using a recognized methodology, such as through Method 24 or 24A tests for VOCs and Method 311 for HAPs. We define formulation data as data based on mixtures of known quantities of materials with known compositions determined by testing or formulation data. For example, formulation data would be reported when mixing a known quantity of a pure solvent with a known quantity of a second material whose VOC composition was determined by testing. The testing and/or formulation data can be provided by suppliers of these materials or determined by the printer through his own testing or monitoring of formulations.

Most printers will seek to rely on their suppliers to provide these data. Suppliers provide these data through certified product data sheets (CPDS), sometimes called "EPA VOC Data Sheets;" material safety data sheets (MSDS) (required by OSHA's Hazard Communication Program); or other technical data formats that identify the appropriate data on material properties and composition. We believe it is fully acceptable for you to allow facilities to use any of these information sources to obtain the required data, provided they include documentation on how the data were derived and the data provide a degree of accuracy sufficient to calculate emissions and determine compliance. This documentation may include identification of specific test methods used or a description of the source of formulation data.

Should an MSDS show a VOC content range greater than one percent, we suggest the printer either report the high end of the range as the VOC and HAP content or test the material using M24. If the printer chooses to test the material using M24 and if the VOC content is one percent or greater, then we suggest the printer conduct M311 testing on the material and report the HAP content derived from the test. If the M24 test shows the VOC content is less than one percent, then the printer should report the test value for VOCs and the same value for HAPs.

Regardless of the source and quality of the data used by the printer, you should retain the right to require material testing by the facility or to collect samples and have tests conducted as needed to verify compliance.

4.2 WHAT ARE THE ISSUES CONCERNING THE USE OF M24 AND M24A WITHIN THE PRINTING INDUSTRY?

M24 and M24A are the two test methods used to determine the VOC content of materials used by the printing industry. We present guidance within this section to address the following issues related to the applicability and clarification of M24 and M24A:

- For what printing processes does M24 and M24A apply?
- How do you apply the precision adjustment within M24?
- How do you determine the VOC content of thin-film radiation cured coatings and non-ink and coating printing products?
- For what printing processes can the 50 percent retention factor be applied?

4.2.1 For What Printing Processes Does M24 and M24A Apply?

M24 is used to determine the elements needed to calculate the VOC content of paints, inks, varnishes, lacquers, or related surface coatings. M24 may not be appropriate for determining the VOC content of other types of materials (e.g, cleaners, fountain solutions and screen reclamation materials). Parts of M24 may be helpful in characterizing certain aspects of these other materials (e.g., density, water content and exempt solvent content).

M24A only applies to solvent-borne inks and related coatings used in the publication gravure industry. Historically, M24A has been erroneously included in permits for lithographic, screen printing, flexographic and product/packaging rotogravure printing operations as the compliance demonstration method for inks and coatings due to the inclusion of the word "ink" in its title. To clarify the use of these two testing methodologies within the printing industry, a *Federal Register* notice containing corrections was published on October 1, 2000. This notice revises the title and scope of the method to clarify that M24A only applies to solvent borne publication gravure inks and related coatings. The revised title of M24A is "Determination of Volatile Matter Content and Density of Publication Rotogravure Inks and Related Publication Rotogravure Coatings." This position has been stated clearly in our "Alternative Control Techniques Document: Offset Lithographic Printing," (EPA, 1994).

4.2.2 How Can M24 Be Adjusted for High Water Content Coatings?

Currently, M24 includes a precision adjustment for use when determining the VOC content of waterborne materials (i.e., materials with at least 5 percent water by weight in the volatile fraction). This adjustment is based on confidence limits established for the American Society for Testing and Materials (ASTM) methods referenced in M24 for measuring weight fraction volatile matter content, weight fraction water content, and coating density. In the method, the determination of the weight fraction VOC content of waterborne coatings is indirect. The weight fraction VOC of a waterborne coating equals the weight fraction volatile matter minus the weight fraction water. To express VOC content in pounds of VOC per gallon, one would then multiply the weight fraction VOC by the coating density. Because VOC content is determined indirectly, small errors in the measurement of volatile content or water content can result in a relatively large error in the calculated VOC content.

On February 3, 1986, we issued a policy memo, "Jefferson County APCD's Request for an Opinion on the Suitability of M24 and M24A as Enforcement Tools," to provide clarification on how to apply the precision adjustment referenced in M24, as well as who should apply the adjustment (EPA, 1986). The memo explains that the primary purpose of the precision adjustments are for us to use in determining whether a waterborne material complies with a specific VOC content limit. Precision adjustments to M24 test values prevent us from citing a supplier or user whose materials are actually in compliance, but measure in violation due to the inherent variability of the method. In addition, if a supplier or user runs M24 on their waterborne material, the method does allow for a specified precision adjustment to correct analytical test values.

However, we want to emphasize the limitations in what is considered acceptable practice from a compliance standpoint that are not discussed in the 1986 memo. For example, if a standard requires that a specific VOC content not be exceeded, a manufacturer should not formulate the material to be higher than this limit, and then attempt to use the precision adjustment to meet the limit. In addition, if a printer obtains the VOC content from formulation data provided by the manufacturer, the printer should not apply the precision adjustment to the formulation value. The printer must also account for VOC added to the coating before it is applied.

You should be aware of our policy as described in the February 3, 1996, policy memo regarding precision adjustments, with the limitations cited above.

4.2.3 How is the VOC Content to Be Determined for Thin-Film Radiation Cured Coatings, Non-Ink, and Coating Printing Products?

NOTE: An American Society for Testing and Materials (ASTM) study is underway to answer this question. Future guidance will be consistent with the results of this study.

M24 should not be used to determine the VOC content of these materials. Within M24, a section addresses the determination of the VOC content of non-thin-film ultraviolet radiation cured coatings. This portion of M24 makes reference to ASTM D-5403. This ASTM method is also only applicable to non-thin-film radiation cured materials. The majority of radiation cured materials used within the printing industry are thin-film; thus the testing procedure adopted under M24 is not applicable. A 1991 letter issued by Jim Berry, to the Graphic Arts Technical Foundation, clearly states that a meaningful result using basic M24 (i.e., the 1 hour bake at 110EC) cannot be accomplished without first curing the specimen.

Cleaning solutions, fountain solutions, and other non-coating materials are also not directly addressed by M24. The testing which established the precision values for the ASTM test methods referenced in M24, only addressed paints, inks, and coatings. Until appropriate testing methodologies are developed for both thin-film radiation cured coatings or non-ink and coating printing products, we recommend you allow printers using these materials to rely on formulation data to obtain the VOC content. If printers change the composition of a material before it is used (e.g., add solvent) the use of these added materials must be included in the accounting.

4.2.4 Are Non-lithographic Processes Eligible for Use of a Retention Factor Where Low Vapor Pressure Cleaning Solvents are Used?

Yes. The 50 percent retention factor use is available for all flexographic, rotogravure, letterpress, and screen printing operations.

As a means to reduce VOC emissions from printing facilities, alternative cleaning solvent products have been formulated. The distinguishing characteristic of many of these alternative products is a lower vapor pressure. We encourage the use of these low vapor pressure products to reduce emissions at the source. We first became aware of low vapor pressure cleaning materials in the context of lithographic printing. In the Alternative Control Technique (ACT) document for lithographic printing (EPA, 1994), we provided a 50 percent retention factor for certain uses of low vapor pressure cleaning materials. Low vapor pressure cleaning materials are now being used by other types of printers. We recommend that the 50 percent retention factor be extended to all print processes. To apply the retention factor, the following conditions must be met:

- Solvent products with a VOC composite partial vapor pressure of less than 10 mm Hg at 20 degrees Celsius must be used. The composite partial vapor pressure is calculated based on the formula below:

$$PP_c = \sum_{i=1}^{n} \frac{(W_i)(VP_i)/MW_i}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

Where:
- PP_c = VOC composite partial pressure at 20EC, in mm Hg
- W_i = Weight percent of the "i"th VOC compound, in grams
- VP_i = Vapor pressure of the "i"th VOC compound, in mm Hg
- W_w = Weight percent of water in grams
- W_e = Weight percent of exempt compound, in grams
- MW_i = Molecular weight of the "i"th VOC compound, in grams per gram-mole
- MW_w = Molecular weight of water, in grams per gram-mole
- MW_e = Molecular weight of exempt compound, in grams per gram-mole

- Solvent products must be used in conjunction with shop towels. All shop towel containers must be managed and maintained as closed or covered containers.

4.3 UNDER WHAT CONDITIONS CAN M25A BE USED TO DETERMINE THE DESTRUCTION EFFICIENCY OF AN OXIDIZER?

Consistent with the approach presented in guidance prepared by EMC and codified in subpart KK, M25A can be used for determining the destruction efficiency of an oxidizer (inlet and outlet concentrations) when:

- An exhaust concentration of 50 or less parts per million volume (ppmv) as carbon (C_1) is required to comply with the applicable standard;
- The inlet concentration and the required level of control results in an exhaust concentration of 50 or less ppmv as C_1; or
- The high efficiency of the control device alone results in an exhaust concentration of 50 or less ppmv as C_1 (EPA, 1995a).

In situations where M25 is not viable, such as those described in Section 1.1 of M25, a printer may opt to use M25A on the inlet, as well as on the outlet (EPA, 1995a).

4.4 HOW OFTEN MUST CONTROL AND CAPTURE DEVICE TESTING BE PERFORMED?

Individual permitting authorities have developed and implemented their own policies and regulations concerning the frequency of capture efficiency testing (M204), and destruction efficiency testing (M18, M25, M25A). At least one State is requiring capture and control efficiency testing every 2½ years and another state is requiring annual tests, even though many other existing State permits only require testing every 5 years. Conducting these types of tests frequently is costly and repeat testing may be unwarranted in cases where the system and the configuration of the presses have not changed since the previous test.

A printer must conduct the initial testing, in which the parameter(s) for ongoing control and capture device monitoring are identified and the operating range(s) for the parameter(s) is (are) established. As long as the source does not change operations in a way that could affect capture or control device efficiency (which would include decreasing the blower rating, adding printing decks, increasing the distance between presses and dryers, adding or removing floor sweeps, or modifying such that a permit change is required), the ongoing parameter monitoring generates data in the operating range(s) that assure compliance, and the printer practices good operating and maintenance procedures, only periodic retesting for control efficiency and for capture efficiency for unenclosed presses, coaters, or laminators is needed - typically once per title V permit term - unless you require more frequent testing.[3]

4.5 WHAT ARE THE APPROPRIATE PERFORMANCE TEST CONDITIONS?

This issue concerns requiring printers to test under maximum conditions, as opposed to representative (i.e., normal operating) conditions. As a result, the cost to perform these tests is high, materials are wasted, and production is lost because of downtime.

Many existing policies and regulations that were based on earlier guidance still require performance testing to be conducted at maximum operating conditions. Operation at maximum operating conditions for a printing press on a printing line would mean operating at fastest press speed,

[3] Protocols A and B in Appendix C suggest continuous, ongoing parameter monitoring in lieu of periodic retesting for capture efficiency in temporary total enclosures is appropriate. We believe this to be accurate, but will take your comments on the suitability of this approach and on the changes that would warrant retesting.

widest web width, and "full coverage." For example, this would mean for a heatset web offset printing line, the application of ink, fountain solution, coatings, and clean up solvents at a maximum rated consumption, not a representative rate, for each printing unit. Such conditions are not representative of normal operating conditions, and are not representative of conditions ever achieved in practice. Printing under "maximum conditions" disregards print quality and results in a large amount of unsalable product being generated at significant cost to the company.

Depending on the specific job being printed, printing presses are operated with a wide variation in press speed and ink coverage. Even when a press is running a constant job, variations in press speed with accompanying changes in ink and other input materials, periodic shutdowns for press cleaning (scheduled or unscheduled), or web breaks (unscheduled) will occur as the press operators adjust the press to achieve and maintain the desired print quality. Changes in press speed will affect the amount of VOC/HAP emissions in the press dryer exhaust. Likewise, as jobs are completed, presses are shut down to change the plates and perform maintenance, thereby temporarily eliminating the generation of VOC/HAP emissions from the dryer. In the case of multiple presses directed to a common control system, scheduled and unscheduled start-ups and shutdowns will also result in changes in total airflow to the control system. Consequently, the printing process is a non-steady-state, highly variable operation in terms of materials input, VOC/HAP concentration in the exhaust, and airflow to the control system. When multiple presses share a common control system, scheduling production on all presses so that maximum VOC/HAP consumption is expected, maintaining press speed so that maximum VOC/HAP emissions are achieved, and keeping all presses in operation so that maximum air flow is maintained for a period long enough to conduct three 1-hour test runs is artificial and extremely difficult to accomplish.

To address these concerns, we support that compliance testing for either VOC or HAP emissions at printing facilities be conducted under normal or representative operating conditions, in accordance with 40 CFR 60 subpart QQ, section 60.433(a)(8); 40 CFR 63 subpart KK, section 63.827(d)(1)(vii); and the draft Control Techniques Guideline (CTG) for Offset Lithography (EPA, 1993a). These sections specify testing under normal or representative operating conditions, not maximum conditions. As supported in our regulations, we find that testing under representative conditions is sufficient to meet compliance demonstration requirements contained in construction and operating permits. We also recognize that a pre-test meeting between the printing facility owner or operator and you provides a convenient opportunity to define normal, representative printing press operation. During such a meeting, the owner or operator should propose an operating scenario for testing that is representative of actual operating conditions and VOC/HAP input rate to the control device. Such operating conditions should strive to minimize downtime while running as many presses as practicable. The proposed operating scenario should be reflective of a typical normal production schedule. As necessary, proposed testing conditions should rely on historical production records for establishing average coverage rates, press speeds, or ink and other input material consumption rates, run times, and average time of intermittent events such as press cleaning, web breaks or similar shutdown situations.

Because activities such as cycling of automatic blanket washing systems, press speed variations, web breaks or other short-term events in which the print quality is being checked, are part of normal,

representative operations, we would expect sampling to continue during these short-term events while the control device for multiple presses is being tested. All testing conditions should be thoroughly discussed and approved by you prior to the actual test date.

In some instances, particularly where a printer wants to obtain a VOC emissions cap or otherwise quantify VOC emissions, a printer may choose to establish, during performance testing, both an upper and lower boundary on their facility's representative conditions.

We believe that a printer may exceed his units' emissions limits without a need for any type of enforcement action, provided that appropriate terms and conditions appear in the permit (e.g., the emission limitations apply at all times; except during emissions testing to develop operational parameter ranges provided that the printer sends you an advance notice to perform such testing). The printer should send a notice identifying the proposed test date, and you should establish test boundaries, such as maximum deviation or maximum emission levels allowed during testing.

Apart from conducting performance testing once per permit term - and from your ability to require such tests as needed - subsequent compliance testing need only occur when different operating conditions (e.g., new or different equipment, VOC-containing materials, or control devices) present a more challenging capture or control device scenario than was tested previously or a reasonable assurance of compliance is not otherwise assured.

4.6 IS A PERMIT REVISION NEEDED IN ORDER TO USE THE LATEST TEST RESULTS?

Testing performed subsequent to issuance of a title V permit may require several permit revisions to incorporate the results of the testing. Replicable operating procedures are a means to avoid the need for a later permit revision and to fill the gap between the amount of information known at the time of permit issuance and the amount of information ultimately deemed necessary. Please see Section 6.4.1 for more details on how a replicable operating procedure can be used to achieve this flexibility.

4.7 HOW CAN DESTRUCTION EFFICIENCY REQUIREMENTS BE MET DURING LOW FLOW / CONCENTRATIONS?

Achieving a specified control outlet VOC concentration is recognized as an acceptable alternative to destruction efficiency for compliance demonstration. The outlet concentration must be 20 ppm expressed as C_6H_{14} to serve as a surrogate for destruction efficiency. This approach can eliminate the need to conduct extensive destruction efficiency tests by focusing only on VOC outlet concentration. In many situations, VOC outlet concentration is more indicative of overall control device operation. There are several instances where the only option available to the printer is to strictly measure the outlet concentration for compliance demonstration. Printers utilizing combined dryers and control devices that do not have an inlet to measure or where there is a consistently low VOC inlet concentration due to light coverage (e.g., book manufacturing) may need to utilize this VOC outlet concentration approach.

4.8 HOW CAN PRINTERS DEMONSTRATE COMPLIANCE WITH CAPTURE EFFICIENCY TESTING REQUIREMENTS?

4.8.1 When Is Capture Efficiency Testing Required?

For printers complying with a rule by using add-on control equipment, the efficiency of the capture system must be determined. There are several approaches a printer can use to determine capture efficiency.

A printer can demonstrate that the capture system is a permanent total enclosure. This requires that the capture system meet the criteria given in M204 for a permanent total enclosure and all the exhaust gases from the capture system are ducted to an add-on control device provided that the M204 criteria continue to be met. The capture efficiency of a permanent total enclosure is assumed to be 100 percent and no capture efficiency testing is required.

For capture systems that are not permanent total enclosures, capture efficiency testing is required except in the two situations described below. Capture efficiency test procedures are presented in Method 204. Alternative capture efficiency test procedures are described in section 4.8.2.

There are two situations in which capture efficiency testing is not required for non-permanent total enclosure capture systems. The first, is when a liquid-liquid material balance is used to determine the overall control efficiency of the capture system and add-on control device. This approach is commonly used for solvent recovery systems.

The second situation in which capture efficiency testing is not required, is for heatset web offset lithographic printing presses. To demonstrate capture efficiency, for these type presses, the printer may demonstrate that the dryer is operating at negative pressure relative to the surrounding pressroom. As long as the dryer is operated at negative pressure, the capture efficiency for VOC from the heatset lithographic inks and varnishes (coatings) is assumed to be 100 percent and no capture efficiency testing is required for the VOC from these materials. This position is given in the September 1993 draft CTG for Offset Lithography, (EPA 1993b), and a letter written by John Seitz in 1997 (EPA, 1997).

Heatset lithographic inks and varnishes are paste-type materials. The VOC in these materials are high boiling oils which volatilize only within the dryer. If other types (e.g., fluid) of coating materials are used on a heatset lithographic press, then capture efficiency testing is required for the VOC from these other materials.

Values for dryer carryover (capture) of low vapor pressure automatic blanket wash materials and alcohol substitute fountain solution materials are presented in the ACT document for lithographic printing (EPA, 1994). Capture efficiency testing is not required for the VOC from low vapor pressure automatic blanket wash materials and alcohol substitute fountain solution materials, as long as the dryer is operating at negative pressure relative to the surrounding pressroom.

As mentioned in section 3.1.1., Appendix C contains VOC emissions capture efficiency testing and monitoring approaches.

4.8.2 When Can Alternative Capture Efficiency Testing Be Allowed?

Alternative capture testing is allowed as provided in our February 1995 policy memorandum from J. Seitz (EPA, 1995c) and the "Guidelines for Determining Capture Efficiency" (EMC GD-035) (EPA, 1995b). The latter document includes our recommended procedures for capture testing.

CHAPTER 5
MACT STANDARDS PERMITTING

A printing and publishing facility may be subject to one or two different National Emission Standards for Hazardous Air Pollutants (NESHAP), depending on the surface coating processes conducted at the facility:

- 40 CFR part 63, subpart KK, for the Printing and Publishing Industry
- 40 CFR part 63, subpart JJJJ, for the Paper and Other Web Coating Industry (proposed rule)

These NESHAP impose emission standards based on the maximum achievable control technology (or MACT), and are generally referred to as MACT standards. Subpart KK establishes limits on organic hazardous air pollutant (HAP) emissions from publication rotogravure, product and packaging rotogravure, and wide-web flexographic printing presses. Subpart JJJJ establishes limits on organic HAP emissions from facilities that operate web-coating lines. We have been careful to develop subparts KK and JJJJ to avoid having the same equipment subject to both standards, although it is possible for the two rules to apply to different equipment at the same facility.

Printing facilities that include chrome plating operations for preparing cylinders may also be subject to the NESHAP for hard and decorative chromium electroplating and chromium anodizing tanks (40 CFR part 63, subpart N).

This chapter primarily discusses permitting issues for subpart KK. We emphasize subpart KK because subpart JJJJ has not been finalized (at this writing) and because many printing facilities will not be subject to it. The chapter is organized into six sections:

- Section 5.1 provides an overview of subpart KK
- Section 5.2 addresses maintaining the compliance flexibility of subpart KK in the title V permit
- Section 5.3 discusses issues related to monitoring under subpart KK
- Section 5.4 clarifies the interface between subpart KK and the part 63 General Provisions (40 CFR part 63, subpart A)
- Section 5.5 addresses issues related to performance tests under subpart KK
- Section 5.6 provides information on the proposed subpart JJJJ.

5.1 OVERVIEW OF SUBPART KK

5.1.1 What Facilities and Equipment Are Subject to Subpart KK?

Subpart KK applies to any facility that is a major source of HAPs, and that operates publication rotogravure (PR), product and packaging rotogravure f(PPR), or wide-web flexographic (WWF) printing presses. A major source of HAPs is a facility that emits, or has the potential to emit, 10 tons per year (tpy) or more of any single HAP, or 25 tpy or more of all HAPs combined. For this purpose, the facility is defined broadly to include all activities "located within a contiguous area and under common control." Thus, the entire site is included, not just the presses subject to the MACT standards.

At facilities subject to subpart KK, the standards apply to certain equipment, known as affected sources. There are two types of affected sources:

- A PR affected source includes all of the publication rotogravure presses at the facility and all affiliated equipment, including proof presses, cylinder and parts cleaners, ink and solvent mixing and storage equipment, and solvent recovery equipment.
- A PPR or WWF affected source includes all of the product and packaging rotogravure and wide-web flexographic printing presses at the facility.

Under some circumstances, the facility has the option of including "stand-alone coating equipment" in the PPR or WWF printing affected source, if the coating equipment and at least one press process a common substrate, apply a common "solids-containing material" (e.g., a coating or ink), or use a common air pollution control device to control organic HAP emissions.

In addition, there are five types of exemptions allowed under subpart KK. These exemptions include:

- Synthetic minor facilities,
- Research or lab equipment,
- PR and WWF proof presses,
- "Ancillary" printing, and
- "Incidental" printing.

5.1.2 What Are the Applicable Requirements of Subpart KK?

Subpart KK's applicable requirements include the HAP emission limits, monthly compliance demonstration procedures, and operation, maintenance, testing, monitoring, recordkeeping, and reporting requirements (see Table 5-1). Subpart KK's requirements are supplemented by the MACT General Provisions of 40 CFR part 63, subpart A, which were developed so that these common provisions would not have to be repeated in every MACT standard. The General Provisions apply to every MACT standard unless they are overridden by the standard. Table 1 of subpart KK specifies which sections of the General Provisions apply and do not apply to subpart KK.

Table 5-1. Applicable Requirements for Subpart KK

Applicable Citations		
Subpart KK	Subpart A	Notes
Emission standards (new and existing sources): Publication rotogravure		
§63.824(b)	none	An affected source must limit organic HAP emissions to #8 percent of the total volatile matter (including water) used each month.
Emission standards (new and existing sources): Product and packaging rotogravure or wide-web flexographic printing		
§63.825(b)	none	An affected source must limit organic HAP emissions for each month to one of the following: (a) #5 percent of the organic HAP applied (b) #4 percent of the mass of all materials applied (c) #20 percent of the mass of solids applied (d) #a calculated equivalent allowable mass based on the HAP and solids content of all materials applied
Compliance demonstration procedures		
§63.824 (b)(1)-(3) §63.825 (b)(1)-(10)	none	The facility must demonstrate compliance each month. There are 3 general compliance methods: (a) Capture and control emissions using an add-on control device (b) Use compliant materials (those with a HAP content low enough to achieve compliance without the use of an add-on control device) (c) A combination of methods (a) and (b)
Operation & maintenance (O&M) requirements		
§63.830 (b)(5)	§63.6	Requirements include O&M in a manner consistent with good air pollution control practices at all times, and the development and implementation of a startup/shutdown/malfunction plan (if an add-on control device is used).
Performance test methods and procedures		
§63.827 (b)-(f)	§63.7	Subpart KK gives specific testing requirements, and it is supplemented by the General Provisions requirements.
Monitoring requirements		
§63.828	§63.8	Subpart KK gives specific monitoring requirements, and it is supplemented by the General Provisions requirements.
Recordkeeping requirements		
§63.829 (b)-(f)	§63.10	Subpart KK relies heavily on the General Provisions for recordkeeping requirements, but adds specifics in some areas.
Reporting Requirements		
§63.830(b)	§ 63.9 § 63.10	Subpart KK specifies some requirements, but relies heavily on the General Provisions for notifications and reporting.

Because they are federally-enforceable requirements of the Clean Air Act, you must reflect the applicable requirements of both subpart KK and the General Provisions in the facility's title V permit.

5.2 MAINTAINING COMPLIANCE FLEXIBILITY UNDER SUBPART KK

Subpart KK requires a facility to demonstrate compliance with the applicable HAP emission limits for each and every month. To address different plant configurations and to provide compliance flexibility, the subpart includes a wide variety of procedures for this monthly compliance demonstration. However, the flexibility built into the subpart may be lost if the facility is "locked into" a single compliance option by its title V permit. As a means to avoid this potential problem, the compliance options matrix approach may be used to maintain compliance flexibility in the title V permit. The compliance matrix approach will be of value to facilities that anticipate changing their compliance strategy during the life of the permit.

There are a variety of reasons that a facility may wish to build in the flexibility to switch among compliance options without being required to revise its title V permit. A few examples of situations where flexibility would be desirable are the following:

- A facility that currently uses an add-on control device to comply with subpart KK is planning to switch to compliant coatings within the next 5 years (i.e., within the term of its title V permit);
- A facility that normally uses HAP-compliant coatings (but uses a control system for VOC compliance) anticipates projects that will require the use of noncompliant coatings, which will require the use of the control system to comply with subpart KK;
- A PPR/WWF affected source that uses compliant coatings wishes to be able to switch among the compliance options from month to month depending on the materials it applies (e.g., HAPs #4 percent of total materials applied versus #20 percent of solids applied);
- A facility that currently uses subpart KK's synthetic minor mechanism (or another enforceable synthetic minor mechanism) to avoid the MACT standard wishes to build in the freedom to increase production, thereby becoming subject to the standard; and
- A facility that currently uses subpart KK's incidental or ancillary printing exemptions wishes to build in the flexibility to change how it uses the exempted equipment, making it subject to all the requirements of the MACT standard.

In the compliance options matrix approach for maintaining compliance flexibility, the title V permit includes a matrix, or table, that lists the compliance options in the subpart and lays out the associated testing, monitoring, recordkeeping, and reporting requirements for each option. The matrix establishes the compliance options (and associated requirements) as "alternative operating scenarios." The facility is free to switch among these alternative operating scenarios without a permit revision, as long as it maintains at all times an on-site log identifying which scenario is currently in use.

Appendix E provides compliance options matrix tables for 15 distinct scenarios according to the type of affected source, the method of compliance, and the plant configuration. These tables also provide useful information for sorting out the available compliance options and the requirements

associated with each. The principles governing the compliance options matrix approach are listed at the start of Appendix E. A complete example of the compliance options matrix approach, including examples of the complementary permit conditions, is also presented for a facility that operates wide-web flexographic presses and uses compliant coatings.

The tables in Appendix E include only the compliance options for facilities that are subject to the HAP emission limits. However, a facility may also incorporate into its permit a compliance options matrix that includes an exemption (e.g., synthetic minor, incidental printing, etc.) as one alternative operating scenario (including all the associated requirements for maintaining exempt status), as well as MACT compliance options that the facility will use if it elects to forgo the exemption in the future.

5.3 MONITORING UNDER SUBPART KK

Chapter 3 presents information on monitoring requirements and associated title V permitting for printing facilities. This section provides supplemental information on monitoring considerations for facilities subject to subpart KK. Section 5.3.1 discusses tracking the quantity of materials used and, where applicable, the amount of volatile matter recovered. Section 5.3.2 addresses continuous parameter monitoring systems (CPMS) used to demonstrate ongoing compliance. Finally, Section 5.3.3 clarifies the continuous emissions monitoring system (CEMS) compliance options.

5.3.1 How Should Facilities Track Material Consumption and Recovery Under Subpart KK?

Most compliance options under subpart KK require the facility to track materials for the monthly compliance demonstration. In addition, the synthetic minor facility, ancillary printing, and incidental printing exemptions allowed under subpart KK also require the facility to track materials to document that the exemption continues to apply.

The only compliance options for which material tracking is not required are for PPR/WWF affected sources that (1) use only materials that contain #0.04 weight fraction of organic HAP, on an as-purchased basis, or (2) meet the percent reduction compliance option, demonstrated using CPMS or CEMS (i.e., not using liquid-liquid material balance). As written, all compliance options for PR affected sources require tracking the usage of all volatile materials and of organic HAP. However, such tracking actually is unnecessary to demonstrate compliance for PR affected sources that achieve at least 92 percent control of organic HAP emissions, when using the CPMS or CEMS compliance options.

Section 3.2 of this document discusses the tracking of material composition and usage by facilities to demonstrate compliance with applicable limits. As discussed in Section 3.2.2, the facility must include certain general information regarding its monitoring approach in its permit, while the specifics of the monitoring program may reside outside the permit (e.g., in the permit application, in a separate monitoring plan, or in some other document agreed upon between you and the facility). Appendix D presents guidance on the components and contents of the more detailed monitoring plan.

These principles for measuring material usage apply to subpart KK, and examples related to subpart KK are included in the discussions of Section 3.2.2 and Appendix D. These principles apply to any facility that must track material consumption or the quantity of volatile matter recovered to comply with an applicable Subpart KK limit, or to maintain an exemption.

We consider material tracking systems of all types to qualify as CMS under the MACT General Provisions. As a result, the CMS monitoring, recordkeeping, and reporting requirements in the General Provisions apply, although you should interpret and apply these requirements reasonably for tracking systems. For example, the QC plan for a system of manual entries in a log might be limited to an annual verification that the responsible parties understand their duties and are properly filling out the log. Note, however, that any instruments used in a material tracking system (for example, solvent meters) should be held to all the elements of the General Provisions CMS requirements, as appropriate for each instrument.

The composition of the materials used by a facility is equally important to the quantity used. Subpart KK clearly specifies the techniques for determining composition, so we do not address them extensively here. However, we would like to clear up one topic that has caused some confusion: the Certified Product Data Sheet (CPDS).

Subpart KK indicates that the facility may rely on HAP content data provided by its suppliers on CPDS. We do not intend for this requirement to create a new type of vehicle for reporting formulation data. You may accept any type of credible documentation of HAP content, provided it meets the subpart KK requirements. For example, an MSDS is acceptable as long as it includes the required information..

5.3.2 What Is EPA's Guidance on Continuous Parameter Monitoring Systems for Subpart KK?

This section provides guidance on interpreting the related MACT General Provisions and suggested requirements and quality assurance/quality control (QA/QC) procedures for common continuous parameter monitoring systems.

One area addressed extensively by the General Provisions is monitoring. The General Provisions define the term "continuous monitoring system" (CMS), and include numerous provisions for CMS governing installation, operation, quality control, performance evaluation, recordkeeping, and reporting. According to Table 1 of subpart KK, most of these CMS provisions apply to subpart KK.

Continuous monitoring systems are defined broadly in the General Provisions to include, but not to be limited to, continuous emissions monitoring systems (CEMS), continuous opacity monitoring systems (COMS), and continuous parameter monitoring systems (CPMS). Continuous parameter monitoring systems include the temperature monitors and capture system monitors required under some subpart KK compliance options.

A number of the General Provisions governing CMS were written with CEMS or COMS in mind, with the result that it is sometimes difficult to apply them directly to CPMS. Accordingly, you should apply the General Provisions to CPMS in light of the following principles:

- All the elements of a complete monitoring program that are included in the General Provisions are applicable to CPMS.
- Some of the specific requirements do not apply literally to CPMS. These must be replaced by provisions that are appropriate for the type of parameter monitor to be used.

For example, although the 40 CFR 63.8(c)(7)(i) definition of when a CMS is "out of control" may not apply directly to a CPMS, the monitoring program should include an appropriate definition for the monitor to be used. This definition should capture suspicious readings in the short term (e.g., flagging values outside the expected range and prompting action by the facility to investigate and correct any problems). In addition, the definition should encompass failure to achieve the required specifications over the longer term (e.g., when the facility determines during a periodic recalibration that the monitor has been operating outside its accuracy specifications). As another example, many data collection instruments have drift checks performed daily, in order to validate their calibration. Such drift checks are not relevant for persons who collect and record data manually.

To ensure that the monitoring program is well thought-out and complete and that you and the facility have a common understanding of what the facility is required to do, we suggest that you have the facility prepare a monitoring plan for your review and approval. A monitoring plan should identify:

- The indicator(s) of performance - i.e., the parameter, such as temperature, that will be monitored;
- The measurement technique(s) - including detector type, location, and installation specifications; inspection procedures; and quality assurance and control measures;
- The monitoring frequency;
- The averaging time;
- The definition of out-of-control periods; and
- The method(s) used to determine emissions during out-of-control or missing data periods (see section 3.4).

While subpart KK and the General Provisions do not, in so many words, require the facility to develop and submit a monitoring plan, most of the elements of such a plan are required. We believe that a comprehensive plan will benefit both you and the facility, clarifying responsibilities and allowing you to work through any issues up front and avoid problems later on. Note also that a well-developed monitoring program provides the facility with an excellent basis for the compliance certifications that it is required to submit annually under the title V permit program.

Figure 5-1 presents example permit conditions related to the suggested monitoring plan. The example conditions are broadly phrased; you can add specific subpart KK citations or requirements if desired. These conditions are suitable for CEMS, as well as CPMS.

We are currently developing performance specifications and QA/QC requirements for common types of CPMS that will provide specifics for many of the other elements to be addressed in monitoring plans. Until they are added to the Code of Federal Regulations, we suggest that you use the draft requirements presented in Figures 5-2 and 5-3. As permits are revised or renewed after the CPMS performance specifications and QA/QC requirements are promulgated, you may wish to adopt the promulgated requirements.

Figure 5-2 presents specifications and requirements for temperature monitoring devices. For temperature monitoring devices on oxidizers, subpart KK includes specific requirements for some of the elements that must be addressed in the facility's monitoring plan. These include accuracy specifications, location of the temperature sensor, and calibration frequency for data recorders [see 40 CFR 63.828(a)(2)(ii) and (a)(4)]. Figure 5-3 presents specifications and requirements for pressure monitoring devices, which may be used by facilities that are required to monitor a capture efficiency parameter. We prepared these requirements for general use with NESHAP. The requirements of subpart KK should be used where there are conflicts, which are noted in the figures.

We believe that the draft specifications and requirements in Figures 5-2 and 5-3 are presumptively acceptable (adjusted as necessary to meet the requirements of subpart KK), pending promulgation of final ones. While a facility may propose different specifications and requirements, you should require such facilities to demonstrate that their proposals are adequate. These facilities must individually address the CMS requirements of the General Provisions at 40 CFR 63.8(c), (d), and (e).

Please note that the CMS performance specifications and QA/QC requirements discussed here are only one aspect of a complete monitoring plan. Refer to Appendix C of this document for examples of comprehensive monitoring protocols for oxidizer destruction efficiency and capture efficiency. (The protocols in Appendix C were developed for the Compliance Assurance Monitoring and Periodic Monitoring programs. Monitoring for subpart KK may be more rigorous. For example, CMS are required for all capture systems and oxidizers under subpart KK, regardless of the size of the emission point.)

In addition, the facility's monitoring plan must go beyond the examples included here and in Appendix C by specifying the procedures that the facility will use to perform the various tasks in the protocol, such as calibrations and inspections. However, we believe that the plan need not be included in the permit in full. Thus, changes may be made to the monitoring plan without a permit revision, subject to your approval.

5.3.3 What Is EPA's Intended Interpretation of Subpart KK's CEMS Compliance Options?

This section clarifies subpart KK's compliance options that rely on the use of CEMS. Subpart KK is inconsistent regarding the monitoring required for these options.

The CEMS compliance options require the facility to monitor continuously the mass flow rate of total organic volatile matter at the inlet and outlet of the control device [see 40 CFR 63.824(b)(1)(ii)

and 63.825(c)(2)(iii), which are referred to by a number of other options]. A monitoring system for mass flow rate requires a monitor for the concentration of organic volatile matter and a monitor for the volumetric flow rate of the gas stream. However, the monitoring section of subpart KK discusses only the CEMS for organic volatile matter concentration [see 40 CFR 63.828(a)(2)(i) and (a)(3)]. In addition, provisions in the performance testing section that provide for an exemption from testing for facilities that continuously monitor the control device inlet and outlet refer only to monitoring concentration [see 40 CFR 63.827(a)(1)].

We intend for facilities that select the CEMS compliance options to operate a monitoring system such that mass emissions at the inlet and outlet of the control device (and, therefore, control device efficiency) can be determined for each month. This requires concentration monitoring at the inlet and the outlet in all cases. However, the volumetric flow rate monitoring that is necessary can vary with the situation, depending on the variability in flow. Where the volumetric flow rate may vary, flow rate monitoring is needed.

For a facility using an oxidizer, volumetric flow rate must be monitored at both the inlet and the outlet of the oxidizer. This is necessary because the flow rate typically differs at the inlet and outlet because of the natural gas that is introduced to maintain the combustion temperature and the breakdown of the organic volatile matter that occurs as it is combusted.

The volumetric flow that reaches a control device in the printing and publishing industry typically varies as print stations and presses come on and off line. For this reason, volumetric flow rate monitoring is needed to accurately calculate the control device efficiency over each month. However, the volumetric flow rate typically does not differ between the inlet and outlet of a solvent recovery device. Thus, a facility that selects the CEMS compliance option for a solvent recovery device may be able to get accurate results by monitoring volumetric flow rate at only the inlet or the outlet to the device, and using the monitored value to represent both inlet and outlet flow for each time period. You may approve single-point volumetric flow rate monitoring provided that the facility demonstrates that flow is essentially constant across the control device and the facility implements a good O&M program to detect and repair any leaks in the system.

At some facilities, the volumetric flow reaching the solvent recovery device may be constant. In this situation, volumetric flow monitoring is unnecessary. You may approve the CEMS compliance option without volumetric flow monitoring if the facility meets the requirements for single-point monitoring and also demonstrates that flow to the solvent recovery device is essentially constant across all operating conditions.

In all situations where the facility monitors both concentration and volumetric flow rate, the appropriate performance specification for the monitoring systems is Performance Specification 6 of 40 CFR part 60, appendix B, "Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources." This performance specification draws on Performance Specification 8 or 9 (as selected by the facility) for some aspects of the concentration monitor, and includes some independent requirements for the volumetric flow rate monitor and some overall

requirements for the integrated mass flow rate monitoring system. For long-term QA/QC, the requirements of appendix F of 40 CFR part 60 apply.

Both Performance Specification 6 and 8 rely for some requirements on the "span value" specified in the applicable subpart. However, subpart KK does not specify a span value. Consequently, the facility must propose a span value for each monitor. The span value should be about 1.5 to 2 times the maximum level expected at the point that is being monitored.

In order to qualify for the §63.827(a)(1) exemption from performance testing, a facility must monitor as discussed above. Note also that while a facility that selects the CEMS compliance option is not required to conduct a performance test to demonstrate compliance, testing will be required for purposes of the CEMS performance evaluation.

5.4 INTERFACE OF SUBPART KK WITH THE MACT GENERAL PROVISIONS

This section clarifies the intended interface between subpart KK and certain portions of the MACT General Provisions. Section 5.4.1 discusses the requirement for a Notification of Compliance Status, while Section 5.4.2 discusses the requirement for Semi-Annual Summary Reports. In Section 5.4.3, we discuss the applicability of the General Provisions on performance testing to material composition testing.

5.4.1 Who Should Submit a Notification of Compliance Status?

The regulations require <u>every</u> facility subject to subpart KK's emission limits to submit a Notification of Compliance Status. The notification's specified contents include the methods that were used to determine compliance, the methods that will be used to determine continuing compliance, the types and quantities of HAPs emitted by the source, a description of the air pollution control equipment (or method) for each emission point, and a statement as to whether the source has complied with subpart KK. This is important information that every facility should communicate to you, as intended by subpart KK and the General Provisions. There is no other mechanism under subpart KK or the General Provisions for the facility to transmit this information to you.

The Notification of Compliance Status is to be sent within 60 days following "the completion of the relevant compliance demonstration activity specified in the relevant standard." This should be interpreted to mean the first monthly compliance determination that the facility is able to complete. For facilities using compliance options that do not require performance tests (i.e., facilities using compliant inks and coatings or a liquid-liquid material balance), the Notification of Compliance Status should be postmarked by the date 60 days after the end of the first full calendar month that the facility is subject to subpart KK's emission limits. For facilities using compliance options that necessitate a performance test, the Notification of Compliance Status should be postmarked by the date 60 days after the performance test is completed (assuming that the performance test is conducted after the compliance date).

Existing facilities not required to conduct a performance test should have submitted the Notification of Compliance Status by the end of August 1999, based on the compliance determination for June 1999.

The General Provisions indicate that the Notification of Compliance Status is to be submitted to the Administrator before the facility has a title V permit and to the permitting authority after the facility obtains its title V permit. However, the General Provisions define "Administrator" to mean the Administrator of the EPA or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of part 63). Thus, before you have been delegated the authority to implement and enforce subpart KK, the facility should send this notification to our appropriate Regional Office. After this delegation, the facility should send the notification to you. If the entity in your State that receives delegation of subpart KK is different than the designated title V permitting authority, the facility should send the notification to the appropriate agency depending on whether it has received its title V permit when the notification is due.

5.4.2 Who Should Submit Semi-Annual Summary Reports, and When?

Every facility subject to subpart KK's emission limits is required to submit the semi-annual Summary Reports. This is the only mechanism within subpart KK and the General Provisions for regular reports on a facility's compliance status.

Any facility that operates a CMS - which includes CEMS, CPMS, and material tracking systems - must submit both Summary Reports and, under some circumstances, full Excess Emissions and Monitoring System Performance Reports, consistent with 40 CFR 63.10(e)(3). In some cases, more frequent reports may be required. You should apply these reporting requirements in a manner appropriate for each monitoring system. For example, do not try to force requirements intended for instrumental monitors onto manual recordkeeping systems.

The reporting period for semi-annual Summary Reports is each calendar half, which means January through June and July through December. Each Summary Report is to be postmarked within 30 days following the end of the reporting period. Thus, a facility's first Summary Report is due at the end of July or January, depending on whether the first full month following the facility's compliance date falls in the first half of the calendar year or the second half. For example, for a new facility with a compliance date of October 15, the first Summary Report (covering the months of November and December) would be due at the end of the following January.

Note that the reporting schedule and content of semi-annual Summary Reports are very much open to "streamlining," as discussed in Chapter 6 of this document, to be consolidated with other reporting requirements a facility may have. In addition, the part 63 General Provisions provides for adjusting the reporting schedule by mutual consent of you and the facility, if desired. If you agree to a change in the reporting schedule, the change should be phased in so that no reports are skipped. That is, there should never be more than 6 months between reports, although there might be one reporting period of less than 6 months during the phase-in.

These reports are to be submitted to the "Administrator." As discussed above, this means that until you have received delegation of subpart KK, the facility should send the reports to our appropriate Regional Office. After delegation, the reports should come to you.

5.4.3 What Is the Relationship Between Material Composition Testing and the General Provisions on Performance Testing?

We do not intend for testing to determine the composition of inks, coatings, etc. to be subject to the full range of requirements included in the General Provisions at 40 CFR 63.7 "Performance testing requirements." These requirements include deadlines for conducting a performance test, advance notification of performance tests, site-specific test plans, etc. Such requirements are largely aimed at performance testing of pollution control devices and capture systems.

Some uncertainty in this regard has arisen because subpart KK includes the procedures for determining material composition in 40 CFR 63.827 "Performance test methods." Nevertheless, these test methods were never intended to be subject to much of 40 CFR 63.7. We offer the following guidelines regarding material composition testing:

- Facilities are responsible for obtaining composition data that meet the requirements of subpart KK. As mentioned in section 4.1, facilities may rely on test or formulation data provided by their suppliers, provided that the source of data includes documentation of how the data were derived and the data provide a degree of accuracy sufficient to calculate emissions and determine compliance. Of course, facilities remain liable for the actual HAP content of their inks and coatings, regardless of the values provided to them by their suppliers.
- Audit samples of known composition are available for Method 24, which is the test method for determining the volatile matter and solids content of most inks and coatings. You can obtain these audit samples from us and have the testing company analyze them simultaneously with samples of inks or coatings used at the facility. The analysis results from the audit samples provide a check of the testing company's accuracy. For information about obtaining audit samples, go to our Emission Measurement Center web site at http://www.epa.gov/ttn/emc/email.html#audit.
- Section 63.7(f) applies if a facility wishes to rely on an alternative test method for determining material composition.

5.5 PERFORMANCE TESTS UNDER SUBPART KK

Section 63.827(d) of subpart KK presents the performance test requirements for determining the destruction efficiency of a control device. We offer the following guidance to aid you in interpreting these requirements:

- Section 63.827(d)(1)(v) states that Methods 2, 2A, 3, and 4 of 40 CFR part 60, appendix A are to be performed, as applicable, "at least twice during each test period." This is

intended to mean that the methods are to be performed at least twice during each test run, typically at the beginning and at the end of the run.

- Equation 20 in §63.827(d)(1)(viii) is used to determine the organic volatile matter mass flow rates at the inlet and outlet of an oxidizer.

  < Equation 20 includes measurements of concentration (C_i) and volumetric flow rate (Q_{sd}) on a dry basis. [See the symbol definitions in §63.822(b).] However, Method 25A yields concentrations on a wet basis. Therefore, when Method 25A is used to determine the organic volatile matter concentration, Method 4 results (stack gas moisture content) must be used to convert the Method 25A results from a wet basis to a dry basis.
  < The summation term in Equation 20 is incorrect. Neither Method 25 nor 25A gives speciated concentration results. Therefore, the summation term is unnecessary. Simply multiply the concentration (C_i) by the molecular weight (MW) of the reference compound.

- For determining control device destruction efficiency, the following principles apply:

  < Testing for the mass flow rate of organic volatile matter should be conducted simultaneously at the inlet and outlet of the oxidizer.
  < The inlet mass flow rate (M_{fi}) and outlet mass flow rate (M_{fo}) should be computed for each test run using Equation 20. These values should be used in Equation 21 [see §63.827(d)(1)(ix)] to determine the control device destruction efficiency (E) for each test run.
  < The overall control device destruction efficiency for the test should be computed as the mean of the destruction efficiency values from all the test runs.

- Section 63.827(d)(3) specifies the oxidizer operating parameter that is to be monitored to demonstrate continuous compliance, and specifies how the operating parameter limit is to be determined. The intended interpretation is as follows:

  < The operating parameter to be monitored for oxidizers is temperature. For catalytic oxidizers, the parameter is the gas temperature upstream of the catalyst bed. For other oxidizers, the parameter is the combustion temperature.
  < The operating parameter limit is determined by operating the continuous monitoring system during the performance test. The limit is computed as the time-weighted average of the temperature values recorded during the test. The facility must maintain the oxidizer at or above this temperature (3-hour averages) to demonstrate continuous compliance.

Sections 63.827(e) and (f), supplemented by appendix A to subpart KK, present the requirements for capture efficiency testing. These sections cite the capture efficiency test procedures of §52.741 of 40 CFR part 52, which is the Federal Implementation Plan (FIP) for the Chicago area. However, since subpart KK was finalized, we have codified the capture efficiency test methods from

the Chicago FIP (with minor revisions) at 40 CFR part 51, appendix M, Methods 204 through 204F. We recommend these latter test methods because they represent our latest thinking on capture efficiency testing. The methods are available online from our Emission Measurement Center at http://www.epa.gov/ttn/emc/promgate.html.

The Method 204 series test methods present the methodology for evaluating the various VOC streams needed for determining capture efficiency, but do not discuss how to use the test results to calculate capture efficiency. Refer to the cited section of the Chicago FIP or to the document *Guidelines for Determining Capture Efficiency* (GD-035, dated January 9, 1995), which is available online in PDF format at http://www.epa.gov/ttn/emc/guidlnd/gd-035.pdf. The guideline document discusses EPA's recommended capture efficiency testing protocols and acceptable alternative test procedures.

Note that if the facility selects a compliance option that requires a capture efficiency test, continuous monitoring of the capture system will be required, as well. Appendix C of this document presents some example capture efficiency monitoring protocols. For purposes of subpart KK, the facility's monitoring protocol must include continuous monitoring of one or more capture system operating parameters to demonstrate ongoing compliance.

5.6 SUBPART JJJJ

Subpart JJJJ for the Paper and Other Web Coating Industry is a proposed MACT standard that will establish limits on organic HAP emissions from facilities that operate web-coating lines. It should be noted that the final rule may differ in some respects from what has been proposed.

5.6.1 What Facilities and Equipment Are Subject to Subpart JJJJ?

A facility will be subject to subpart JJJJ if it is a major source of HAP and if it operates one or more web-coating lines. Printing presses subject to subpart KK are not considered web-coating lines; therefore, no lines will be subject to both subparts. However, a facility could have some lines subject to subpart KK and others subject to subpart JJJJ, and therefore be required to demonstrate compliance with both subparts. In many cases, to avoid dual applicability, a facility can elect to include its coating lines in the affected source subject to subpart KK.

For subpart JJJJ, the affected source is the collection of all web-coating lines at a facility, except for any of the following:

- Web-coating lines designated as stand-alone coating equipment under subpart KK if those lines are included in the subpart KK compliance demonstration;
- Web-coating lines used for coating metal coil (which are regulated under 40 CFR part 63, subpart SSSS); and
- Web-coating lines used as research or laboratory equipment, for which the primary purpose is to conduct research and development into new processes and products.

5.6.2 What Are the Emissions Limits and Compliance Options for Subpart JJJJ?

An affected source may comply with any of the emission limits summarized in Table 5-2. These limits are in the same format as the emission limits for PPR/WWF affected sources under subpart KK. For existing sources, the emission limits are at the same level under subpart JJJJ and subpart KK. Subpart JJJJ includes more stringent limits for new sources, while the limits for new and existing sources are identical under subpart KK.

Table 5-2. Subpart JJJJ Emissions Limits

	Existing sources must limit the emissions of organic HAP from the affected source to no more than...	New sources must limit emissions of organic HAP from the affected source to no more than...
Option 1	5% of the organic HAP applied for the month	2% of the organic HAP applied for the month
Option 2	4% of the mass of coating materials applied for the month	1.6% of the mass of coating materials applied for the month
Option 3	20% of the mass of solids applied for the month	8% of the mass of solids applied for the month

Facilities may comply with the emission limits by (1) capture and control of HAP emissions using an add-on control device, (2) use of compliant coatings, or (3) a combination of add-on control and lower-HAP coatings. Facilities choosing to comply with Option 1 must comply by using a capture system and control device that achieve the required overall control efficiency. Facilities choosing to comply with Option 2 or 3 may comply in one of four ways:

- Using “as-purchased” compliant coatings
- Using “as-applied” compliant coatings
- Using “as-applied” coatings that keep HAP emissions below a calculated equivalent allowable mass
- Using a combination of lower-HAP coatings and add-on control to achieve an emission rate equivalent to Option 2 or 3 or a calculated equivalent allowable mass

To ensure practical enforceability, subpart JJJJ will also contain provisions for performance tests, monthly compliance demonstrations, monitoring, recordkeeping, and reporting. In addition, the part 63 General Provisions will apply to the extent that they are not overridden by subpart JJJJ.

5.6.3 What Is the Compliance Schedule for Subpart JJJJ?

The date on which a web-coating facility must achieve compliance with subpart JJJJ depends on whether it is a new affected source or an existing affected source. The cutoff for this determination is the day that the rule was proposed in the *Federal Register*, which was September 13, 2000. If construction or reconstruction of the affected source began on or before that day, it is an existing affected source; if after, it is a new affected source.

The exact compliance date for subpart JJJJ will depend on the "effective date" of the rule. The effective date is the date that the final rule is promulgated in the *Federal Register*, which has not yet occurred. Existing affected sources must comply by the date 3 years after the effective date. New and reconstructed affected sources must comply upon startup or by the effective date, whichever is later.

Under the Clean Air Act, new MACT standards must be incorporated into existing title V permits within 18 months after promulgation (if 3 or more years remain in the term of the permit) and into new permits upon initial issuance. However, existing sources will not be required to comply with subpart JJJJ until 3 years after promulgation. As a result, you and the facility may need to incorporate subpart JJJJ into the permit before the facility has determined exactly how it will comply with the standard and before it has finalized the associated compliance details. Under these circumstances, a "placeholder" can be incorporated into the title V permit at this time to govern the facility's compliance with subpart JJJJ until the permit is subsequently revised to add the final compliance details.

5.6.4 What Needs to Be Included in a Placeholder for Subpart JJJJ?

At a minimum, a placeholder for subpart JJJJ needs to:

- Acknowledge that subpart JJJJ applies to the facility, citing the subpart at a minimum;
- Define what permit revision process will be used to add the specific compliance obligations to the permit, and when the source must submit the application for the revision (typically along with the Notification of Compliance Status); and
- Define how the facility will monitor compliance with the standard starting on the compliance date

Appendix F contains example placeholder language for facilities that will be affected sources under subpart JJJJ. This placeholder is based on the proposed rule and may have to be revised to reflect the final subpart JJJJ.

MONITORING PLAN

(1) For each monitoring system required under subpart KK, you must develop and submit for approval a site-specific monitoring plan (consistent with 40 CFR 63.828) that addresses the following:

   (A) Installation of the CMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions;
   (B) Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction system; and
   (C) Performance evaluation procedures and acceptance criteria (e.g., calibrations).

(2) In your site-specific monitoring plan, you must also address the following in a manner consistent with 40 CFR 63.828:

   (A) Ongoing operation and maintenance procedures in accordance with the general requirements of 40 CFR 63.8(c)(1) and (3);
   (B) Ongoing data quality assurance procedures in accordance with the general requirements of 40 CFR 63.8(d); and
   (C) Ongoing recordkeeping and reporting procedures in accordance with 40 CFR 63.829, 40 CFR 63.830, and the general requirements of 40 CFR 63.10(c), (e)(1), (e)(2)(i), and (e)(3).

(3) You must conduct a performance evaluation of each CMS in accordance with your site-specific monitoring plan and the general requirements of 40 CFR 63.8(e).

(4) You must operate and maintain the CMS in continuous operation according to the site- specific monitoring plan.

Figure 5-1. Example permit conditions for a CPMS monitoring plan.

TEMPERATURE MONITORING DEVICES

Temperature can be measured using devices such as thermocouples, resistance temperature detectors (RTDs), and Infrared (IR) thermometers. Requirements for temperature monitoring devices include the following:

(1) Collect at least 4 evenly-spaced temperature readings per hour of process operation in order to have a valid hour of data. [Subpart KK requires "continuous" measurement, without defining the term. You and the facility should agree on a definition of "continuous" and on the criteria for a valid data.]
(2) Locate the temperature sensor in or as close as practical to a position that provides a representative temperature. [Subpart KK specifies sensor location for oxidizers in 40 CFR 63.828(a)(4).]
(3) Use a temperature sensor with a minimum measurement accuracy of 2.8 degrees Celsius or 1% of the temperature value, whichever is smaller, for a noncyrogenic temperature range. [Subpart KK specifies accuracy of ±1E C or ±1% of the temperature value, whichever is greater, in 40 CFR 63.828(a)(4).]
(4) Perform an initial calibration according to the procedures in the manufacturer's owners manual, and then conduct an initial temperature sensor validation check. Validation checks, both initial or ongoing, include comparisons to redundant sensors, comparisons to calibrated measurement devices, or separate sensor and system checks by electronic simulation.
(5) Conduct calibrations and validation checks quarterly and following 24-hour excursions. [At 40 CFR 63.828(a)(2)(ii), subpart KK requires the calibration of the data recorder to be verified every 3 months.
(6) Perform quarterly visual inspections of all components if redundant sensors are not used.
(7) Record the results of the inspections, calibrations, and validation checks in a log.
(8) Record at least one temperature reading every 15 minutes while the process operates. [Subpart KK requires a "continuous" recorder, without defining the term. You and the facility should agree on what constitutes "continuous" recording of temperature readings.]
(9) Determine the hourly average of all recorded temperature readings. [Subpart KK requires 3-hour averages.]

Figure 5-2. Example permit conditions for temperature monitoring devices.

PRESSURE MONITORING DEVICES

Pressure can be measured using devices such as manometers, gauges, and transducers (including strain gauges). Requirements for pressure monitoring devices include the following:

(1) Collect at least 4 evenly-spaced pressure readings per hour of process operation in order to have a valid hour of data. [Subpart KK requires "continuous" measurement, without defining the term. You and the facility should agree on a definition of "continuous" and on the criteria for a valid data.]
(2) Locate the pressure sensor(s) so that a representative pressure is provided.
(3) Use a device with a minimum measurement accuracy of 0.5 inch of water or a device with a minimum measurement accuracy of 5% of the pressure range. [Note that monitoring for capture efficiency under subpart KK may require a very sensitive monitor with a fine resolution of the scale. The required negative pressure to meet permanent total enclosure requirements is only 0.007 inches of water. To monitor pressures in this range, the resolution of the scale must be down to 0.001 inches of water and the accuracy must be in approximately the same range.]
(4) Conduct an initial calibration according to the manufacturer's requirements, and then conduct an initial pressure sensor check. Initial or ongoing pressure sensor checks include comparisons to redundant sensors, comparisons to calibrated measurement devices, separate sensor and system checks by calibrated pressure source simulation, and separate sensor and system checks by pressure source and calibrated measurement device simulation.
(5) Conduct monthly leak checks, in which pressure connections are to remain stable for 15 seconds after application of 1.0 inch of water. [Note that this level of pressure may not be appropriate for the very sensitive monitors that may be used to monitor capture efficiency under subpart KK.]
(6) Conduct calibration and validation checks quarterly and following 24-hour excursions.
(7) Perform at least quarterly visual inspections if redundant sensors are not used.
(8) Record the results of the inspections and checks in a log.
(9) Record at least one pressure reading every 15 minutes while the process operates. [Subpart KK requires "continuous" measurement, without defining the term. You and the facility should agree on what constitutes "continuous" measurement of pressure readings.]
(10) Determine the hourly average of all recorded pressure readings. [Subpart KK requires 3-hour averages.]

Figure 5-3. Example permit conditions for pressure monitoring devices.

CHAPTER 6
SMART PERMITTING - STREAMLINING PERMIT CONTENT AND MINIMIZING UNNECESSARY PERMIT REVISIONS

6.1 SMART PERMIT DEVELOPMENT

A source cannot make a change at its facility that is in conflict with the terms of its permit without obtaining a permit revision. Thus, the permit terms constrain the source's ability to make certain changes at the facility, and the more detail that is included in the permit about a source's operations and compliance methods, the more constrained the source is. You can often minimize the number of times a source will have to revise its permit by writing a "smart permit." Such a permit maximizes the existing flexibility found in applicable requirements while still ensuring that those requirements are enforceable as a practical matter. To the extent permits can be written (or rewritten) to minimize the use of terms that are not needed to assure compliance and that might restrict future title V changes, many future permit revisions should be avoided. Smart permits, by their design, strive to allow a source to make changes as expeditiously as would be allowed under the relevant applicable requirements(s) alone.

Smart permits also often bring greater clarity to the source's requirements, avoiding unnecessary, time-intensive discussions between you and the source. These permits affirmatively structure the required data collection (i.e., testing and monitoring) terms to provide a clear basis for making annual compliance certifications. Permit terms to clarify when particular requirements apply, and when they do not, help to avoid misunderstandings and the potential for contested enforcement actions.

We believe smart permits will reduce unintended permit revision burdens on you and sources and will satisfy completely flexibility needs for many sources. The first two White Papers on the operating permits program describe many smart permitting techniques.[4] This guidance describes some additional approaches for you to consider for both printers and other industrial sectors, as appropriate. In the first two White Papers, we described a number of ways to reduce superfluous permit terms and/or detail in the permit. These included guidance on purging extra detail, incorporating requirements by reference, and appropriate treatment for insignificant activities and generally-applicable requirements. Another smart permitting technique, as discussed in WPN2, is "streamlining." As described in section 6.2, when a unit is subject to overlapping applicable requirements, you can sometimes streamline those requirements into a single list of permit terms that will assure compliance with all the requirements. Only after exhausting relief allowed via the smart permit approaches should you proceed to see whether and to what degree the other flexibility mechanisms discussed in section 6.4.3 should be explored in order to provide an additional level of operational flexibility and planning certainty for the source.

[4] White Paper for Streamlined Development of Part 70 Permit Applications, July 10, 1995 (White Paper Number 1) and, White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program, March 5, 1996 (White Paper Number 2).

6.2 STREAMLINING PERMITS FOR PRINTING FACILITIES

Streamlining is identifying a set of applicable requirements, taken or derived from several, potentially overlapping requirements, against which compliance can be based and thus assure that all requirements will be met. Sources that can demonstrate compliance with the streamlined requirements are considered to have met all requirements subject to the streamlining.

For title V sources, streamlining has the potential to simplify compliance demonstration when there are overlapping requirements. Through streamlined permit conditions, you can eliminate potential confusion and inconsistencies that may develop when demonstrating compliance with each of the overlapping requirements. Streamlining can focus compliance assurance on one set of requirements (i.e., emission limit, monitoring, recordkeeping, and reporting) that will fulfill all applicable requirements. As shown in Chapter 3, many printing facilities are faced with demonstrating compliance with multiple requirements, all of which must be incorporated into their title V operating permits. The multiple requirements originate from:

- SIP requirements representing RACT;
- BACT or LAER in construction permits for new and modified sources;
- federal NSPS;
- federal MACT provisions for HAPs;
- CAM rule; or
- Title V monitoring, recordkeeping, and reporting requirements.

6.2.1 What Factors Influence Streamlining?

In developing streamlined permit conditions, you must compare the stringency of the multiple requirements to be streamlined. Consideration must be given to a number of factors when comparing these requirements. This includes:

- **Pollutants Regulated** - For printers, SIP requirements for VOCs apply to the same emissions units subject to MACT for HAPs. Although not all organic HAPs are VOCs and not all VOCs are organic HAPs, in the printing industry, almost all organic HAPs used are also VOCs. Exceptions are limited to cleaning agents containing specific chlorinated compounds (i.e., methylene chloride) which are HAPs but are exempt from our definition of VOC. Many control systems are equally effective in controlling VOCs and volatile HAPs.

- **Cross-Line Averaging** - RACT requirements typically apply to each individual press – no averaging across more than one press or printing line is allowed. LAER/BACT requirements can be press specific, but sometimes allow for averaging of limits across several presses subject to the same NSR/prevention of significant deterioration (PSD) permit (e.g., rely on the same control system). The MACT standard applies as if the affected source is a single entity made up of all the presses subject to the standard.

- **Units of Applicability** - Compliance terms can vary in the printing industry. Compliance requirements for control approaches based on capture and control systems can generally be compared. However, compliant ink and coating requirements can be based on different properties of materials, such as volume fractions in RACT requirements versus mass fractions in MACT standards. The variability in densities of solvents and ink and coating solids make it difficult to establish a framework to compare compliant coating requirements.

- **Averaging Times** - For printing facilities, RACT and NSR limits are generally based on daily averages. NSR PTE limits apply to maximum emissions over prescribed time periods which can be hourly, daily, or monthly. The MACT standard applies based on a calendar month compliance demonstration. Differences in averaging times can impact the stringency of the standard. The longer the averaging time, the greater the flexibility to the facility in demonstrating compliance. Re-formatting old NSR requirements, as discussed later in this chapter, may eliminate some of the averaging time concerns in streamlining.

- **Testing, Monitoring, Recordkeeping, and Reporting** - Requirements in these areas dictate how compliance is demonstrated. They may vary and should be considered along with the emissions limits in streamlining. Monitoring requirements for specific control approaches, in particular, help to define the stringency of specific requirements.

Through comparisons of applicable requirements, differences in how they apply and opportunities to streamline will be identified. The above factors may limit opportunities to streamline the specific requirements that include limits on emissions. Nevertheless, you and the permittee may identify opportunities to streamline overlapping procedures for demonstrating compliance with these different limits. For example, performance test requirements under subpart KK may be determined to be equal to or more stringent than SIP or NSR testing requirements. Thus, benefits from streamlining may result from simplifying different monitoring or different recordkeeping requirements alone or be associated with streamlining both the limits and all compliance demonstration requirements that make up two (or more) applicable requirements.

6.2.2 Overlapping Requirements for Printing Facilities

Printing facilities are prime candidates for developing streamlined permit conditions. Typical facilities are often subject to more than one set of requirements. Many printing facilities have older units subject to RACT regulations based on our Control Technology Guidelines (CTGs). RACT for rotogravure and flexographic presses was described in the November 1978 CTG, "Volume VII: Graphic Arts – Rotogravure and Flexography," (EPA, 1978). For lithographic printing, RACT requirements have been based on a September 1993 Draft CTG for Offset Lithographic Printing (EPA, 1993b). RACT requirements generally allow for compliance strategies based on capture and control systems or through the use of compliant materials.

Newer units, in addition to complying with RACT, need to meet BACT or LAER requirements set in PSD or NSR permits. These NSR requirements are generally set around the specific control approach chosen by the facility, for example capture/control in contrast to using compliant materials

with no control system. Some new printing facilities are also subject to NSPS requirements. NSPS apply to publication rotogravure operations (40 CFR part 60 subpart QQ) and vinyl and urethane printing and coating facilities (40 CFR part 60 subpart FFF). Finally, all new and existing rotogravure and wide-web flexographic facilities in the publishing and packaging material industries are subject to a MACT standard (40 CFR part 63, subpart KK). The requirements in this MACT standard have the greatest potential to overlap with RACT, NSR, or NSPS requirements. For example, a printer subject to the monitoring requirements of subpart KK may also be subject to SIP monitoring requirements to implement RACT as well as the CAM requirements for VOC control systems. The specific provisions in each of these sets of requirements were compared in Chapter 2.

6.2.3 How Do Control Strategies Influence Streamlining?

When assessing streamlining options, you must consider the approach taken by printing facilities to control their emissions. Streamlining requirements based on capture and control of emissions may be more feasible, and more beneficial in terms of simplification, than requirements based on use of compliant materials. Some issues associated with streamlining for each control approach are described below.

6.2.3.1 Capture and Control Systems

Assessing opportunities for streamlining overlapping requirements for capture and control systems is the most straight forward. You should be able to identify and compare differences in capture and control requirements easily. Control systems are equally effective in controlling volatile HAPs versus controlling VOCs at printing facilities. If there are overlapping requirements for streamlining consideration at a printing facility, the most stringent requirement is likely to require 100 percent capture and a control efficiency of 95 percent or more. The desired destruction efficiency for incinerators in recent NSR permits may be more stringent than the 95 percent required by subpart KK. Thus, the NSR control efficiency requirement may dictate the stringency of control in streamlining, not the MACT standard. There may be differences in monitoring and testing requirements which you will also need to consider in streamlining.

Streamlining capture system requirements will require you to identify the most stringent monitoring requirements for demonstrating capture. RACT and NSR requirements may only require a one-time capture test, while facilities subject to the subpart KK MACT standard must also continuously monitor and record an operating parameter for capture efficiency.

For control approaches based on incineration, control effectiveness is generally based on an initial performance test and parameter monitoring. Compliance is demonstrated by comparing continuous combustion zone temperature monitoring data with temperature data recorded during the most recent performance test. The temperature data serve to indicate whether or not conditions associated with the destruction efficiency determined by the performance test are maintained. The temperature data do <u>not</u> serve to indicate the degree of destruction achieved on a continuous basis. If the temperature monitoring criteria are met, the destruction efficiency from the performance test serves to demonstrate

compliance. For each set of applicable requirements, different criteria may exist for conducting the performance test, recording temperature data, and comparing the data on a continuous basis.

For example, RACT and NSR requirements generally require the performance test be conducted with facilities operating at close to maximum solvent laydown conditions (see Chapter 4, for alternative testing policy). The combustion zone temperature would be recorded under those conditions during the test. The continuous monitoring and recording of temperature data is also required. The recorded data, generally on strip charts or in a computer file with at least 15 minute values, are then compared to the performance test value.

For rotogravure packaging facilities subject to the subpart KK MACT standard, an initial performance test is required, but under representative operating conditions (rather than maximum). The test would be conducted such that the minimum temperature would be recorded under which the incinerator can achieve the required destruction efficiency of 95 percent. Continuous monitoring of the combustion zone temperature is also required, recording at least 15-minute values, and compiled as rolling three hour averages. To demonstrate compliance, the three hour readings must not be lower than the average temperature, as determined during the performance test.

Both approaches to testing and temperature monitoring are designed to demonstrate that the incinerator achieves the destruction efficiency conditions established by the performance test. Properly designed and sized incinerators tend to perform better under high solvent load conditions. Therefore, the subpart KK approach would be the more stringent approach for the two cases outlined above.

For solvent recovery systems used to control emissions, RACT, NSR, and MACT requirements base compliance demonstration on one of two approaches. Facilities are either required to conduct (1) periodic LLMB around the printing operation and recovery system it serves, or (2) continuously monitor the recovery systems VOC inlet and VOC outlet concentrations. Both approaches allow for the calculation of recovery system control efficiencies.

For facilities relying on periodic material balances, differences in the frequency or time period for conducting the LLMB may differ between requirements as well as the specificity of data quality requirements for tracking material streams. Subpart KK requires monthly material balances and defines the quality of data to be recorded. For example, subpart KK requires the method used for monitoring the amount of solvent recovered be calibrated within K2 percent. RACT and NSR requirements typically are not that specific. As a result, the subpart KK procedures for conducting the LLMB will generally be the most stringent for printing facilities subject to the MACT.

Facilities may be required by RACT or NSR requirements to conduct LLMBs over shorter time periods than monthly. For streamlining, to achieve the same control efficiency, the shorter the time period covered by the LLMB, the more stringent the requirement. Some subpart KK facilities may have RACT/NSR requirements with less stringent control efficiencies, but with LLMB demonstrations required for shorter time periods. Typically, the RACT and NSR requirements for material balances are not specified to this detail in regulations or permits. The longer the time period covered by the LLMB, generally the greater the accuracy in the calculations. The impact of measurement errors are

reduced. You may conclude the increased accuracy provided by subpart KK procedures for LLMBs conducted on a monthly basis is the more stringent requirement.

6.2.3.2 Use of Compliant Materials

Streamlining is more difficult for facilities whose compliance strategies are based on use of compliant materials. The difficulties result from trying to structure a streamlining comparison considering requirements which apply to different pollutants, use different units of applicability in compliance terms, and averaging times. For example, for rotogravure presses, RACT requirements for compliant materials are based on limiting VOC content by volume fractions based on daily averages by press. In contrast, subpart KK offers several compliance options which limit HAP content based on mass fractions determined using monthly averages considering all presses. To compare these requirements, assumptions must be made that all HAPs will be VOCs and visa versa. The range of densities of potential materials will have to be understood to make conversions between mass and volume. You will also need to consider the differences associated with averaging times and press versus facility accounting.

Many States adopted RACT limits for rotogravure and flexographic printing operations based on EPA's Control Technique Guideline (CTG) for Graphic Arts (Control of Volatile Organic Emissions from Existing Stationary Sources - Volume VIII: Graphic Arts - Rotogravure and Flexography 12/1978). The CTG includes compliant coating limits based on volume-based VOC limits (CTG recommended volume-based limits for applied materials of 75 percent or more water or 25 percent of less VOC). To simplify recordkeeping and compliance determination, a weight-based equivalency of 0.5 pound VOC per pound of ink solids was added to the CTG recommendations ("Alternative Compliance for Graphic Arts RACT," Darryl Tyler, OAQPS September 9, 1987 memorandum). States have the option of authorizing the weight-based option on a case-specific basis or by revising their RACT regulation. The use of the weight-based alternative for volume-based RACT requirements may facilitate consideration of streamlining options for compliant coatings. In comparison, in Subpart KK a compliant coating option requires 0.2 pound HAP per pound of ink solids, as a monthly average across the facility.

For some facilities subject to subpart KK, their compliance strategy may not lend itself to streamlining compliant material requirements. Facilities may base compliance on compliant materials for HAPs and control requirements for VOCs. Use of VOC materials with low HAP content would dictate that approach. Facilities that use compliant materials to meet RACT/NSR requirements are also likely to meet compliant material requirements for subpart KK for HAPs. Waterborne and/or radiation-cured materials that comply with VOC limits are not likely to contain appreciable quantities of HAPs.

6.2.4 Existing State Rules

Issue - Several States have daily, line-by-line accounting for compliant coating limits. For example, Wisconsin has a State HAP rule with daily limits, and they have a lithography RACT rule that specifies

process line limits. In order to change interpretation of RACT to apply to cross-line as opposed to line-by-line, they would have to revise rulemaking, which would take about a year.

Approach - Determine constraints you may have in implementing streamlining, and then determine necessary statements that we can make to help address questions with permits. Wisconsin mentioned that they cannot be any more stringent than our regulations, so it would help if we provided direction regarding a streamlining protocol for various regulations.

6.2.5 Streamlining Examples

Examples of streamlined requirements are presented in Table 6-1 and Tables G-1 through G-3 in Appendix G. For facilities subject to subpart KK, presentations are made for streamlining the applicable requirements identified in Chapter 2. The examples are presented for a packaging rotogravure and wide-web flexographic facility with an oxidizer (thermal and catalytic), a solvent recovery system, and a compliant material control strategy. The fourth example is for a publication rotogravure facility with a solvent recovery system. Each example shows what the streamlined requirement would be and the origin of the requirement. In each case, the subpart KK requirements provide the basis for the streamlining.

Table 6-1. STREAMLINING EXAMPLE
Streamlined Requirements for Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Streamlined Requirements	Origin of Requirements
Emissions/ Operating Limits	***Basis*** The streamlined emission limit would be based on the most stringent overall control efficiency requirement applicable to each press or each group of presses with emissions controlled by the same oxidizer. This is expected to be the limit in subpart KK for facilities committing to the 95% overall control efficiency option. (Facilities selecting one of the HAP emission rate compliance options may not be able to streamline the different emission limits because of differences in averaging times between SIP-RACT and subpart KK.) The 95% overall control efficiency requirement would then apply to both VOCs and HAPs. Oxidizers can be assumed to control VOCs and organic HAPs to the same degree. With oxidizers, the temperature monitoring requirements confirm compliance on a continuous basis for each set of applicable requirements. In each case, an initial performance test is required to demonstrate achievement of the required destruction efficiency and to determine the oxidizer operating temperature. The subpart KK limit and associated compliance demonstration procedures based on temperature monitoring can be considered the most stringent, except in cases where greater than 95% control is required in NSR permits. ***Requirements*** 95% overall control efficiency for HAPs and VOCs applied to all presses controlled by the same oxidizer. Any press-specific NSR emission limits that are more stringent than 95% overall control efficiency would apply to that press and any other press vented to the same oxidizer.	Part 63, subpart KK. NSR Permit.
Other - Work Practice Standards	***Basis*** Each set of applicable requirements has similar language requiring use of good air pollution control practices. Subpart A and KK requirements are generally the most prescriptive in this area and can be considered equal to or more stringent than the other requirements for insuring proper operation. ***Requirements*** Operate and maintain source, control equipment, and continuous monitoring systems (CMS) consistent with good air pollution control practices. Develop and implement start-up, shutdown, and malfunction (SSM) plan for source, control system, and CMS.	Part 63, subpart A and subpart KK. Part 63, subpart A and subpart KK.

Table 6-1. STREAMLINING EXAMPLE Streamlined Requirements for Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy		
Applicable Requirement	**Streamlined Requirements**	**Origin of Requirements**
Testing	***Basis*** An initial compliance test is required by each set of applicable requirements to determine capture and destruction efficiency. Site-specific test plans or protocols are required in all cases. The test procedures are essentially the same, based on use of Federal Reference Methods (M) that would be delineated in the test plan. The subpart A and KK procedures for testing are generally the most prescriptive and can usually be considered equal to or more stringent than the other requirements for demonstrating destruction efficiency. Differences may exist in operating conditions required during test. SIP/RACT and NSR requirements may require tests be conducted at various operating conditions (for more information, see subsection 4.5 in Chapter 4). ***Requirements*** Performance test under expected operating conditions consisting of 3 runs (1 hr. min. each). Destruction efficiency determined by M25 or M25A. Capture efficiency by M204 (Procedure T). Performance test to establish minimum temperature where control efficiency is met: for *thermal* oxidizer, combustion temperature; for *catalytic* oxidizer, minimum gas temperature upstream of the catalyst bed. Periodic testing requirement if required by SIP. CMS performance evaluation required for temperature monitors with initial performance test.	Part 63, subpart A. Part 63, subpart A. Part 63, subpart A. Part 63, subpart A. SIP-RACT and/or NSR. Part 63, subpart A and subpart KK.

Table 6-1. STREAMLINING EXAMPLE
Streamlined Requirements for Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Streamlined Requirements	Origin of Requirements
Monitoring	***Basis*** Temperature monitoring is required by each set of applicable requirements. The temperature data serve to confirm the oxidizer is operating at or above the operating temperature documented during the performance test. Differences may exist in how the temperature data are compiled and compared to the operating temperature from the performance test. For example, SIP/RACT may require catalytic oxidizers to monitor both inlet and outlet temperatures, while Subpart KK requires only the inlet temperature to be monitored. In addition, SIP/RACT and older NSR permits may not require continuous recording of temperature. Capture efficiency parameter monitoring is required by subpart KK and may be required by SIP-RACT requirements. Facilities that are subject to the CAM rule must develop, submit, and implement a monitoring plan for VOCs that is based on parameter monitoring for capture and control. The subpart KK procedures for temperature and capture efficiency monitoring are the most prescriptive and can be considered to be equal to or more stringent than the other requirements for confirming that the overall control efficiency is maintained on a continuous basis. A monitoring plan that meets the Subpart KK requirements for HAPs can be expected to satisfy the CAM rule requirements for monitoring VOCs. ***Requirements*** Continuously monitor and record oxidizer operating temperature. For *thermal* oxidizer, monitor combustion zone temperature. For *catalytic* oxidizer, monitor catalyst bed inlet temperature, monitor control device bypass operation using interlocks, and perform annual catalyst activity test. Monitor and record data for designated parameter to track capture efficiency (i.e., permanent total enclosure pressure differential). Install, operate, maintain, and calibrate monitors consistent with written monitoring plan.	Part 63, subpart KK and Part 63, subpart KK. Part 63, subpart A and subpart KK.

Table 6-1. STREAMLINING EXAMPLE
Streamlined Requirements for Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Streamlined Requirements	Origin of Requirements
Recordkeeping	***Basis*** Each set of applicable requirements requires records be kept that document operating and maintenance requirements are being followed and that demonstrate compliance with the applicable limitations. The requirements for the recording and compiling of temperature and capture efficiency parameter data in subpart KK are expected to be the most prescriptive in comparison to SIP/RACT and NSR and can be considered to be equal to or more stringent than the other requirements for documenting continuous compliance. A monitoring plan that complies with the recordkeeping requirements for HAPs under subpart KK can also be expected to satisfy the CAM rule requirements for VOCs. The requirements for maintaining records of compliance with a Startup, Shutdown & Malfunction Plan and a Continuous Monitoring System quality control plan under subpart A and subpart KK are expected to be the most prescriptive and equal to or more stringent than similar provisions with the other applicable requirements.	
	Requirements	
	Monthly summaries of capture efficiency parameter data, rolling 3-hour averages.	
	Monthly summaries of oxidizer operating temperature data, rolling 3-hour averages.	Part 63, subpart KK.
	Written SSM plan and monthly records showing consistency with the SSM plan.	Part 63, subpart KK.
	Real-time records showing inconsistencies with the SSM plan.	Part 63, subpart A & subpart KK.
	Records showing adherence to monitoring plan.	Part 63, subpart A & subpart KK.
	Records of applicability determinations.	Part 63, subpart A & subpart KK.
		Part 63, subpart A & subpart KK.

Table 6-1. STREAMLINING EXAMPLE
Streamlined Requirements for Packaging Rotogravure or Wide-Web Flexographic with Oxidizer Control Strategy

Applicable Requirement	Streamlined Requirements	Origin of Requirements
Reporting	***Basis*** Reporting requirements under subpart KK are the most prescriptive and can be considered as stringent or more stringent than the other reporting requirements. Requirements for testing notifications, submittal of test plans and test results are essentially the same between all sets of applicable requirements. SIP-RACT or NSR requirements may include more frequent submittal of compliance reports in comparison to subpart KK's semi-annual excess emissions report. Title V regulations require at least semi-annual reporting of deviations in monitoring data and provide the basis for reporting under the CAM rule.	
	Requirements	
	Periodic compliance summary report.	SIP-RACT and/or NSR permit.
	Initial notification of standard applicability.	Part 63, subpart A and subpart KK.
	Performance test notification, test plan (protocol), and test results report.	Part 63, subpart A and subpart KK.
	Submittal of monitoring plan for capture system parameter monitoring.	Part 63, subpart A and subpart KK.
	Submittal of CAM plan for capture and control systems parameter monitoring.	CAM rule (if applicable)
	CMS performance evaluation notification, protocol, and report.	Part 63, subpart A and subpart KK.
	Notification of compliance status.	Part 63, subpart A and subpart KK.
	Semiannual excess emissions, deviations in monitoring data, and CMS performance report.	Part 63, subpart A and subpart KK, and title V.
	Semiannual SSM reports and inconsistency reports (as needed).	Part 63, subpart A and subpart KK.

6.3 MODIFICATION OF FLEXIBILITY-INHIBITING NSR REQUIREMENTS

Since the 1970's, printing facility changes have been subject to NSR permitting requirements in preconstruction review programs for new and modified sources established as part of the SIPs. Permits issued under the provisions of SIPs are federally enforceable. NSR programs dictate that sources demonstrate in advance of making major commitments that their capital projects will abide by all applicable air pollution control requirements. The requirements in State NSR programs apply based on the ambient air quality status of the area and the magnitude of the new or modified source relative to established permitting thresholds, generally based on annual potential emissions. Major sources are subject to technology based permitting requirements, BACT in attainment areas and LAER in nonattainment areas.

Sources with potential emissions levels below major source thresholds are subject to State minor source review requirements. Frequently, sources agree to restrictions which limit potential emissions below major source thresholds to eliminate applicability of more stringent major source requirements. Our permitting policies require these restrictions on PTE to be more than a blanket limit on annual emissions, but rather include verifiable and enforceable restrictions on a shorter term basis, generally not longer than 30 days. A minor NSR permit must include conditions to limit a source's emissions rate and PTE. Some States have technology requirements for minor sources. Both major and minor source permits specify the approved capture and control systems performance levels, and testing, monitoring, recordkeeping, and reporting procedures for demonstrating compliance.

The need for operational flexibility has increased significantly for many sectors of U.S. industry, including printers. The global marketplace now requires them to make quick responses to rapidly changing market conditions. A facility may quickly need to begin production of a new product, improve an existing product, shift production from one product to another, alter its manufacturing process, or reformulate its input materials. Often there is a limited window of opportunity, and constraints, such as inflexible permit terms, that prevent or delay such variations in operation can result in significant opportunity costs.

The first two White Papers discussed the opportunity to review existing minor NSR permits for the possible removal of terms that are obsolete or unnecessary, and identified the ways in which such terms might be deleted during the title V permit issuance process. Often, minor NSR permits (particularly those issued several years ago) have been written to satisfy guidelines for practical enforceability, but in doing so have severely restricted the operational choices available to certain sources. The constraining effect of such permits is magnified where the restrictive terms must be met on a short-term basis (e.g., daily).

6.3.1 What are the Printing NSR Terms and Conditions Which Limit Flexibility?

NSR permits terms and conditions can limit operational flexibility, particularly those established for limiting PTE. Based on what we have learned over our years of permitting experience, these requirements can go beyond what may be necessary to ensure compliance with permitting

requirements. Table 6-2 lists examples of NSR terms and conditions that may limit or preclude a printers operational flexibility and impact facility's competitiveness in the market place.

Table 6-2. Examples of Flexibility-Constraining NSR Terms and Conditions

Term or Condition	Why is this inflexible?
Permit requires (or prohibits) the use of specific inks, coatings and/or solvents that may have been identified at the time of permit application	1) As printing materials have developed over the years, the use of specified inks or materials may no longer be desirable from a production or environmental perspective 2) Can potentially limit company's competitiveness through limitations on choice of materials; printers may be required by customer to use specific coatings that meet customer's needs
Permit prescribes limits on throughput of inks and/or coating materials that may have been based on the solvent content of materials specified at time of permit application	Throughput limits for highly variable operations may not be necessary to limit actual emissions below PTE thresholds; they may become an unnecessary restriction on production and create scheduling and delivery problems
Permit requires source to demonstrate compliance with two or three-dimensional limits (e.g., terms that limit both VOC content and material usage rates)	1) If a facility wants to comply with a VOC limit by use of a material with a low VOC content (or no VOC), it would still have to comply with the usage limit 2) Potential disincentive to pollution prevention; limits benefits from using lower-emitting than required materials
Permit requires source to demonstrate compliance with short-term limits	1) Material accounting to demonstrate compliance with daily or other short-term limits at printing facilities is inaccurate and extremely burdensome 2) Hourly and daily limits have proven difficult to enforce from a practical standpoint, and unnecessarily restrictive in demonstrating that actual emissions are below annual PTE thresholds
Permit requires throughput and/or emission limits on individual presses	1) Cannot always accurately measure material usage and emissions for individual presses, one common source (e.g., ink tote) may supply several presses 2) Creates artificial constraint limiting use of individual presses beyond what is needed to protect PTE limits

Rather than incorporating NSR conditions that are unnecessarily prescriptive into the title V operating permit, we believe a good approach is to provide the opportunity for facilities to modify their existing NSR permit conditions. While maintaining the objectives of NSR to limit PTE, you may be able to eliminate or reformulate requirements found to be unnecessarily prescriptive. You may be able to re-format conditions to make them more consistent with how materials are managed at printing facilities, thereby improving the practical enforceability of these requirements. We believe the greater the extent environmental accounting requirements can be met with routine facility material and production accounting procedures, the greater the likelihood compliance problems will be identified by the facility and compliance will be maintained on a continuous basis.

6.3.2 How Do We Meet "Practical Enforceability" Requirements with Highly Variable Operations like Printing Facilities?

Developing replacement conditions to achieve more flexible permit terms must be consistent with guidance on practical enforceability given in our June 13, 1989 memorandum entitled "Guidance on Limiting Potential to Emit in New Source Permitting," signed by Terrell E. Hunt, Office of Enforcement and Compliance Monitoring, and John Seitz, Office of Air Quality Planning and Standards (EPA, 1989). The guidance stressed the need for readily verifiable and enforceable restrictions on actual emissions as outlined in the Louisiana-Pacific case, United States v. Louisiana - Pacific Corporation, 682 F. Supp. 1122 (D. Colo., October 30, 1987) and 682 F. Supp. 1141 (D. Colo., March 22, 1988). The guidance identified short-term production and operational limits as the preferred approach to assure the practical enforceability of a PTE limit. Although this guidance was specifically formulated to prevent circumvention of major source NSR, it has often been applied to govern practical enforceability for all types of purposes.

The guidance also recognized that the unpredictable nature of certain industrial operations precludes the effective use of production and operational limits to restrict PTE. For these highly variable operations, short-term emission limits alone were recognized as more easily enforceable to constrain PTE from highly variable operations. A surface coating operation without add-on controls was identified as an example of a highly variable operation under this policy because of its unpredictable use of numerous coatings containing varying VOC contents.

Why are printing facilities presumptively"highly variable" operations? We believe printing presses qualify as highly variable for several reasons. Printing facilities typically have multiple presses. Any one printing facility may have three or four presses or as many as thirty presses. Each press will offer distinct capabilities defined by a combination of factors such as:

- sizes of substrate that can be processed (web widths or sheet dimensions)
- type of substrate that can be processed (paper, paperboard, foil, plastic film)
- the number of print stations (from one to as many as 11 stations)
- drying capability (extended dryers for difficult drying needs)
- additional substrate processing steps (ability to invert substrate for printing reverse side or ability to laminate two different substrates)
- different finishing capabilities (rewind or inline cutting to produce final product)

Each press will operate independently, with some print jobs lasting less than an hour of actual printing time while other jobs may run for several days, dependent on how many impressions are required to meet the customer's needs. Just-in-time material management policies of customers has led to shorter production runs. The time required to setup for a new print can take three or more hours. Thus, at any one time, all presses can be between jobs or all presses can be in operation.

The properties and application rate of each applied materials are also highly variable. Applied materials include inks, coatings, and adhesives. Each material is formulated with one or more different solvents, each at a different concentration level. A fourfold variance in solids content between different

materials can be expected. The rate of application of each material by each print station varies dependent on how thick of a coating is required (solids laydown rate) and the degree of surface area coverage required. Coverage for an individual ink may be a few percent for a color that is used in only a small portion of a design to complete coverage for a background color or a basecoat or topcoat. The total coverage across all print stations may range from 10 to 20 percent on one job to 300 percent or more on another print job.

Presses may share supply systems for some materials, such as diluent and cleaning solvents, but inks are generally issued to each press in quantities required for each individual print job. Waste materials may be collected by press, or more typically across the facility, but segregated based on ink type to facilitate waste management, e.g., water-based materials kept separate from solvent-based materials.

The large number of variables impacting material usage and emission rates associated with printing precludes the effective use of production or operational limits to restrict PTE. The guidance speaks towards the use of short-term (e.g., daily) emission limits to restrict PTE for highly variable operations like printers. However, the use of VOC containing materials varies significantly over time and across the printing operation making daily accounting of emissions inaccurate and impractical. The summing of multiple short-term measurements results in summing the error for each measurement. This summation is particularly troublesome as it amplifies inaccuracies when small quantities are measured frequently.

For some printers, short-term limits on VOC emissions can be made practically enforceable through the use of continuous emission monitoring systems (CEMS) where emissions are measured directly. Chapter 3 described approaches to assure the proper operation and maintenance of CEMS and their use in the practical enforceability of PTE limits.

At highly variable operations where use of a CEMS is not feasible, or the expense of purchasing and operating CEMS is not warranted, consistent with the June 1989 guidance a mass-balance "formula" approach can be used to track VOC emissions in a practically enforceable manner. As described below the formula approach relies on an explicit relationship between emissions and certain production or operational parameters. As an alternative to daily emission calculations described in the June 1989 guidance, replacement conditions implementing the formula approach meet the need for readily verifiable and enforceable restrictions on actual emissions as outlined in the Louisiana - Pacific case.

6.3.2.1 Formula-Based Approaches

Experience has shown that limits on production and operating parameters can be overly constraining for some VOC sources, restricting operations even when the source is well within the underlying emissions limit. For example, a permit term limiting the annual hours of operation might have been placed on a surface coating line to limit its annual VOC emissions. If this source pursues a pollution prevention alternative and switches to lower-VOC coatings, this operational limit becomes needlessly restrictive-the source could meet the underlying PTE limit even if it operated more hours per

year. Thus, the source is unnecessarily limited in its ability to respond to market demand. A less constraining permit term would limit this surface coating source's VOC emissions directly.

Limits on VOC emissions typically can be made enforceable as a practical matter. The most direct method is through the use of well maintained and operated CEMS. Where reasonable to do so, we encourage the use of these systems, which provide a direct measurement of the most critical parameter-emissions themselves. Where a CEMS is not appropriate, a "formula approach" can often be used to track VOC emissions in a practical, enforceable manner. This approach involves tracking the critical production and/or operating parameters, and inputting these values into a formula to determine actual emissions from the source. The actual emissions can then be compared directly to the applicable PTE limit.

We believe that the formula approach replicably establishes a quantifiable relationship between emissions and certain production and operational parameters. For a source to qualify for the formula approach, you must determine that its emissions can be accurately and replicably determined in this way. The formula approach requires establishing in the permit an explicit relationship between material usage, material properties, capture and control system performance, and/or production data as the basis for calculating actual emissions. This approach has been utilized in some State operating permits to re-format or replace prescriptive NSR requirements. Sources like printers that rely on a mass balance approach to determine emissions are prime candidates for using this approach. The use of the formula approach is consistent with past EPA guidance in that it relies on appropriate tracking of production and/or operational parameters. These parameters for printers are often more easily tracked than emissions themselves. Sources that can use a conservative mass balance approach are good candidates for this approach.

To implement the formula approach, you would need to coordinate with facility personnel to develop a series of relationships that account for the emissions from the materials consumed at the facility. For example, for rotogravure presses, this might require one equation to address usage of inks, coatings, and solvents, and a second equation for the usage of cleaning materials. For lithographic presses, equations might also be needed for fountain solution additives, with separate equations for manual and blanket wash cleaning solvent use. The equations would be expected to follow essentially the same approach the facility has historically used to calculate emissions. Each facility would be required to maintain records of data used to determine each parameter established in each equation.

The formula approach must include the effect of capture systems and control devices, where these efficiencies are known and can be reliably monitored. We expect continuous parameter monitoring as an indicator of ongoing performance of these systems at the level established through performance testing. (The permit may include a replicable operating procedure (ROP) for updating the indicator value without a permit revision after subsequent testing.) In addition, where we have established values for capture or retention of VOC in the product (e.g., for lithography), these values may be integrated into the formula approach. Finally, the VOC content of waste materials can be subtracted from emissions, if this quantity is accurately determined and well documented.

As mentioned, the formula approach for a given source must be entirely nondiscretionary and replicable. That is, the formula necessarily yields a unique and repeatable outcome when the required information is input. In addition, the formula(e) must be explicitly established and appear in the permit. Any special cases, such as case-specific equilibrium data, also must be established in advance. The source's monitoring and tracking methodology also must be established, replicable, and properly documented. That is, the inputs to the formula(e) must themselves be obtained through replicable procedures, and the operation of the formula(e) must replicably produce the emissions value that is to be compared to the source's emissions limit.

Although you are free to use the formula approach for any source that meets the requirements discussed above, we believe it is best suited to printers with operations that are highly variable. By "highly variable," we mean those operations whose VOC emissions are a function of multiple process parameters that often vary, and do so independently. For example, VOC emissions from a printing line may depend on a combination of factors, including line speed, the dimensions of the substrate, the percent of the surface area printed, the thickness of coating applied, the number of coating stations in use, and the VOC content of the inks coatings. At many sources, any or all of these parameters may vary widely from job to job depending on the product being produced and customer specifications, making it impossible, short of a formula approach, to correlate emissions with one, or even a few, of the parameters.

The potential benefits of using the formula approach include:

- Provides a verifiable and enforceable approach to calculating actual emissions from the facility; you know exactly how emissions are determined;
- Allows the facility significant flexibility to adjust its operations to meet customer demands and to reformulate the process materials to reduce VOC content (and emissions), facilitate possible pollution prevention and increased production;
- Eliminates the need to conduct daily emission calculations; and
- Enables most facilities to utilize their existing material and production tracking systems to verify the data needed to demonstrate compliance under a mass-balance equation-based approach.

Examples of situations where the mass-balance formula-based approach might be considered include demonstrations that:

- C An individual press or group of presses remains below a NSR/PSD threshold (e.g., 40 tons per year VOC emissions - generally taken to limit applicability of NSR/PSD);
- C The combined emissions from all presses remains below a threshold (i.e., major source - FESOP vs. title V applicability); and
- C The emissions from a facility correspond to a particular emissions fee.

In addition, the mass-balance equation-based approach, combined with a measure of production (hours of operation, impressions, etc.) may also be used to determine the emissions from individual presses within a group of related presses. For example, if total emissions for a group of presses is

calculated and the production of a single press is 20 percent of the total production of the group of presses, it may be assumed that 20 percent of the emissions are attributable to that press. Use of such allocations is appropriate and often necessary where the group of presses share materials from a common source (e.g., multiple presses receiving ink from a common set of ink totes or central distribution system, fountain solution mixed and distributed to multiple presses by a single system, cleaning solvent dispensed from a single source for an entire pressroom).

6.3.2.2 Averaging Periods

As noted previously, permit terms that involve short-term averaging or tracking periods also can limit a source's operational flexibility. Two types of short-term limits can impede flexibility: (1) those imposed on a source even though the underlying requirement is an annual PTE limit and (2) those imposed on a source by an applicable requirement with a short-term averaging period over which the source cannot reasonably track its compliance.

Short-term limits of the first type often have been added to permits in response to our June 1989 guidance, which indicated that PTE limitations should be "as short term as possible and should generally not exceed one month." The primary purpose of that guidance was to prevent you from having to wait for long periods to establish a continuing violation before initiating an enforcement action.

As previously discussed, our June 1989 guidance was primarily intended to prevent circumvention of major NSR. For other situations; however, we believe that annual PTE limits on VOC emissions can be enforced on a rolling yearly total, computed at least each month for the preceding 12 months (i.e., as a rolling 12-month total). You and the source should work together to determine the appropriate averaging period for each case. Averaging periods for annual PTE limits may vary from 365 (or 366) days, rolled daily, to 12 months, rolled monthly. A rolling 12-month limit may be especially appropriate for a source or emissions unit with highly variable operations. Such sources typically need the freedom to respond to market forces quickly, which can result in substantial, unpredictable fluctuations in emissions from day to day.

The other type of short-term averaging or tracking problem involves an averaging period over which a source cannot reasonably quantify emissions so as to be reasonable and achievable for demonstrating compliance. For example, reasonably available control technology (RACT) requirements for VOCs are often stated as a daily limit. However, it may not be reasonable or accurate for sources with highly variable operations to track emissions on this basis. For example, many printing/coating and batch chemical processes frequently conduct jobs or batches that extend across multiple days, making daily tracking a problem. We believe that our June 1989 guidance largely addresses this situation by authorizing the averaging time for tracking materials use to extend up to a month in length, where highly variable operations are involved. Therefore, where a VOC source can demonstrate to you that it is impractical to conduct short-term tracking, you may allow the source to determine emissions over a longer period that is more conducive to emissions tracking (up to 1 month), then prorate the emissions to the shorter averaging period based on production and/or materials usage.

You and the source also should define the averaging or tracking period for effects-based emissions limits so as to be reasonable and achievable. These limits are limits that have been defined based on projected ambient impacts, typically through site-specific modeling. They may be those limits placed in major NSR permits to protect the national ambient air quality standards (NAAQS) or a prevention of significant deterioration (PSD) increment, or limits derived from a State toxics program. Such limits may be short-term limits based on the associated ambient concentration averaging period (e.g., daily or even shorter).

If modeling or ambient monitoring has established a clear link between short-term emissions from a specific source and prohibited short-term ambient impacts, and you believe it is essential for your air quality planning to ensure that a source never exceed such a short-term limit, you should include the limit in its title V permit, along with a practical means to track compliance. However, we do not expect such short-term averaging or tracking conditions to be needed for VOC emissions. Modeling for ozone effects is not required under the PSD regulations and, in any case, modeling techniques are not precise enough to implicate emissions from a single source in an ozone NAAQS or increment violation.

Where highly variable operations are subject to effects-based, short-term limits, a CEMS may be the only practical method for determining continuous compliance. You should; however, be sure that this level of compliance assurance is truly warranted before requiring a source to bear the expense of purchasing and operating a CEMS.

When capture systems and control devices are used to achieve PTE limits or the other types of emissions limits discussed above, these devices must be monitored continuously to assure ongoing performance at the tested level. The discussion above about allowing monthly tracking prorated to daily levels does not apply to parameter monitoring for these systems. However, an exception should be made for solvent recovery systems for which the source uses a liquid-liquid mass balance approach to determine control efficiency–these mass balances may extend over a period of up to 1 month.

6.3.3 What is an Example of a Mass-Balance Formula Approach?

The following example is based on existing NSR permit terms for a heatset web offset lithographic press with a regenerative afterburner. In this example, 22 separate limits have been established to demonstrate compliance with a ton per year value determined on a rolling 12-month total. The existing limits are presented first, followed by the possible replacement terms based on the formula approach.

Existing Limits

I. VOC emissions shall not exceed 36.7 tons per year and operation of equipment shall comply with the following:

	VOC Content	Usage[a]			VOC Emissions[b]		
Material	% by weight	lb/hr	tons/month	tons/yr	lb/hr	tons/month	tons/yr
Ink	39	195	70	634	6.1	2.2	19.8
Fountain Solution VOC Additives		7.8	2.8	25.4	2.9	1.1	9.4
Blanket Wash	100	4.1	1.5	13.3	2.3	0.9	7.5
					Total	4.2	36.7

[a]Annual VOC emissions limit based on materials consumption listed, VOC content, and 90 percent control.
[b]Assumes 20 percent of ink solvent retention in web, 50 percent retention of manual blanket wash in cleaning wipers, 30 percent of fountain solution is evaporated prior to dryer, none of manual blanket wash and 40 percent of automatic blanket wash is vented to afterburner system, and 90 percent control by the afterburner system.

II. The afterburner system shall be operated to reduce captured emissions by 90 percent.

III. Compliance with annual limits shall be determined from a running total of 12 months of data.

Formula Approach Replacement Terms

Using the mass-balance equation-based approach, the above NSR permit terms could be reformatted using three equations as follows:

I. To determine compliance with the annual emissions limit of 36.7 tpy, VOC emissions shall be calculated using the following formulas:

Equation 1. $E_M = E_1 + E_2 + E_3 + E_4$

Where:

E_M = Total VOC Emissions (tons/month) as summed from VOC emissions for individual materials (e.g., ink, fountain solution, etc.)

Equation 2. $E_n = U_n \times V_n \times (1 - R_n/100) \times \{1 - (ç_n/100) \times (î/100)\}$ [1]

Where:

E_n = VOC emissions from an individual material
U_n = Total usage of the individual material
V_n = Average VOC content
$î$ = Control Efficiency (90%)
R_n = Amount of VOC retained and not emitted
$ç$ = Capture efficiency for individual material emitted

Ink (n = 1):

E_1 = Ink VOC Emissions (tons/month)
U_1 = Ink Usage (tons/month)
V_1 = Weighted Average Ink VOC Content (wt%) [2]
R_1 = Ink VOC Retained in Paper (20%) [3, 4]
$ç_1$ = Ink VOC Capture Efficiency (100%) [3]

Fountain Solution (n = 2): [5]

E_2 = Fountain Solution VOC Emissions (tons/month)
U_2 = Fountain Solution Usage (tons/month)
V_2 = Weighted Average Fountain Solution VOC Content (wt%) [2]
R_2 = Fountain Solution VOC Retained in Paper (0%) [3]
$ç_2$ = Fountain Solution VOC Capture Efficiency (70%) [3, 6]

Manual Cleaning Solvent (n = 3):

E_3 = Manual Cleaning Solvent VOC Emissions (tons/month)
U_3 = Manual Cleaning Solvent Usage (tons/month)
V_3 = Weighted Average Manual Cleaning Solvent VOC Content (wt%) [2]
R_3 = Manual Cleaning Solvent VOC Retained in Shop Towels (50%) [3, 7]
$ç_3$ = Manual Cleaning Solvent Capture Efficiency (0%) [3]

Automatic Blanket Wash (Lithography) (n = 4):

E_4 = Automatic Cleaning Solvent VOC Emissions (tons/month)
U_4 = Automatic Cleaning Solvent Usage (tons/month)
V_4 = Weighted Average Automatic Cleaning Solvent VOC Content (wt%) [2]
R_4 = Automatic Cleaning Solvent VOC Retained (0%) [3, 8]
$ç_4$ = Automatic Cleaning Solvent Capture Efficiency (40%) [3]

Equation 3. EA = EM1 + EM2 + EM3 + EM4 + EM5 + EM6 + EM7 + EM8 + EM9 + EM10 + EM11 + EM12

Where:

EA = Total VOC emissions (tpy) for the previous 12 months
EM1 through M12 = Total VOC emissions per month (tons/month)

II. For each month, the facility shall record materials usage and VOC content, and calculate VOC emissions, to establish the monthly and rolling 12-month summations of total emissions.

III. The afterburner system shall be operated to reduce captured emissions by 90 percent.

Notes and Assumptions for Reformatted NSR Terms and Conditions for Controlled Heatset Lithographic Press(es)

1. For purposes of simplicity, the emissions from each of the process materials (E_n) are shown as being based on the **total usage** (U_n) and **average VOC content** (V_n) of the material, when in fact, the total VOC consumption would be based on the sum of the usage and VOC contents of each of the (potentially) multiple materials used as in:

$$C_n = \sum_{j=1}^{m} U_{nj} \times V_{nj}$$

Where C_n = total VOC consumption of a category of material n (i.e., ink) and j represents each of the various materials in this category

Additionally, the capture and control efficiency for all pollution control devices is assumed to be equal. For a facility with multiple control devices, it is possible that various presses would have differing control device efficiencies, such that:

$$E_n = \sum_{k=1}^{p} C_{nk} \times (1 - R_n / 100) \times [1 - (\varsigma_n / 100) \times (\hat{\imath}_k / 100)]$$

Where k represents each of the product of an individual capture and control device pair.

2. M24 results or manufacturers' supplied certified VOC data based on M24 test results or formulation data.

3. Based on Alternative Control Techniques Document and Control Techniques Document for Offset Lithography.

4. Includes all paste inks and varnishes formulated with low volatility ink oils (e.g., Magie Oil).

5. Records of fountain solution concentrate will provide more accurate VOC content and usage figures than press-ready fountain solution data.

6. Assumes the use of low-volatility alcohol substitutes such as selected glycol ethers or ethylene glycol.

7. Based on the use of low-volatility cleaning solvents (vapor pressure less than or equal to 10 mm Hg at 20EC) and storage of used shop towels containing cleaning solvent in covered containers.

8. Based on the use of low-volatility cleaning solvents (vapor pressure less than or equal to 10 mm Hg at 20EC).

6.3.4 Are There Any Limitations to Using Replacement Conditions for the Mass Balance Equation-Based Approach?

The replacement conditions described in the above example offer a more flexible approach in the form of limitations on operation and production that can be verified monthly through review of records of materials consumption and VOC content. There are some limitations on using replacement conditions; however, replacement conditions in this example must:

- contain the previously established annual emissions limitation which can easily and readily be verified on a monthly basis;
- set out the methodology (formula-based) by which emissions from various process materials will be determined;
- be supplemented, in many locations, by additional limitations on control efficiency, fountain solution VOC content, and cleaning solvent VOC content or vapor pressure;
- link which types and amounts of materials are applied to each press, in cases where the formula is applied to quantify emissions for multiple presses with separate capture and control equipment with different efficiencies; and
- ensure that no emissions rate exceeds the level allowed by any applicable requirement, including:
  - < SIP emission regulations established to meet NSR control technique requirements;
  - < RACT requirements for sources in ozone nonattainment areas that may necessitate recordkeeping on a more frequent basis than monthly.

As with the current permit terms, any violation of replacement terms are potentially subject to enforcement action. The violation may trigger NSR in addition to other enforcement actions consistent with the policy established in the Office of Enforcement and Compliance Assurance's "Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements" memorandum, dated November 17, 1998 (EPA, 1998b).

6.3.5 Can I Revise a Title V Permit to Include a Replacement Approach Concurrent With Revising an NSR/PSD Permit?

Where compliance with underlying requirements can be assured with more flexible permit terms, you may be able to revise minor NSR permit terms into this more flexible format prior to their incorporation into the source's title V permit. You may accomplish this efficiently by using the parallel process mentioned in WPN1 to modify the minor NSR permit (EPA, 1995).

6.4 WHAT ADDITIONAL TITLE V OPTIONS ARE AVAILABLE TO PROVIDE OPERATIONAL FLEXIBILITY?

You and the source may take advantage of opportunities for additional flexibility provided in our part 70 regulations for implementing title V. Some approaches are presented below.

6.4.1 Replicable Operating Procedures to Provide Testing Results Without Permit Revisions

Because section 504(a) requires title V permits to contain terms sufficient to assure compliance with all applicable requirements, specific values that reflect testing results for capture and/or destruction efficiency or parameter ranges that define acceptable operations for control or process equipment may need to be reflected in permits. Conceivably, testing performed subsequent to issuance of the title V permit could require a permit revision to incorporate each new testing result. Where such information is not available at the time of permit issuance or is subject to later revisions, in certain situations you may allow a permit to contain, in lieu of numeric values, a description of the testing procedure that will be used to generate that information and a duty to follow the result where it is approved by you.

For this approach to work, the testing procedure must be "replicable," meaning that every step in the procedure is described such that there is no discretion in how the information is generated and that the procedure will yield the same result every time for the same set of circumstances. If the method as defined by the applicable requirement is not entirely replicable, you may negotiate with the source during the title V permit issuance process any additional terms needed to transform the existing testing procedure into a ROP. Replicable operating procedures are a means to obviate the need for later permit revisions and to fill the gap between the amount of information known at the time of permit issuance and the amount of information ultimately deemed necessary.

Where you determine that a particular testing procedure qualifies (after adding any terms required by you) as a ROP, you can choose to incorporate it into a permit and require, in lieu of a permit revision, that the source:

(1) Send you a notice to announce each test;
(2) Send another notice to convey the results to you, along with a statement of its resultant compliance status (for your approval as necessary);
(3) Use the results of the test in determining compliance once you approve such use; and
(4) Maintain an on-site log of all testing performed under a ROP.

6.4.2 Alternative Operating Scenarios for Existing Emissions Units

Section 70.6(a)(9) provides for "reasonably anticipated operating scenarios" to be included in the title V permit. We encourage this smart permitting technique to provide flexibility to the source to switch among different modes of operation for its existing equipment. Under this approach, the permit must identify each anticipated operating scenario and clearly indicate the applicable requirements associated with each scenario. This can be very useful for multiple-use equipment, such as surface coating lines that can coat a variety of substrates subject to different applicable requirements.

As an example of how this approach works, consider a fossil fuel-fired boiler that is equipped to fire two alternative fuels and is subject to different emissions limits and monitoring requirements depending on which fuel it is firing. If requested by the source, you can incorporate these options into the title V permit, along with the associated limits and monitoring requirements, as alternative operating

scenarios for the boiler. Consistent with §70.6(a)(9)(I), the source must keep records to show which alternative operating scenario is in use at all times.

Another situation for which alternative operating scenarios may be useful is where a source is currently below the applicability cutoff for an applicable requirement, but wishes to allow for the possibility of later becoming subject to the requirement. For example, most MACT standards apply only when a source is a major sources of HAPs. A source will often take a PTE limit on HAPs to become a "synthetic minor" source and avoid having to comply with the MACT standard. However, a source that is currently a synthetic minor source for HAPs may hope to grow and increase production to the point that it becomes a major source of HAP. For such cases, an alternative operating scenario can be included in the title V permit to avoid the need for a permit revision should the source become a major source of HAPs. The scenario should include the requirements of the MACT standard that the source will have to meet, along with a schedule for implementing the requirements.

In using alternative operating scenarios for such sources, you should be careful not to allow a source to circumvent the intent of the applicable requirement. For example, a source should not be allowed to strategically delay the compliance date of a MACT standard through this mechanism. The MACT General Provisions (subsection 63.6(c)(5)) refers to the date specified in the standard for compliance with MACT requirements by a former area source, or if not specified, the same time provided for compliance to existing sources. Where the time allowed is 3 years, there is a potential concern that a source might attempt to manipulate the system by obtaining synthetic minor status prior to the MACT standard's compliance date (thereby not being required to comply at that time), maintaining synthetic minor status for only a short period after the compliance date, and then claiming an additional 3 years to meet the standard. Where you believe that such manipulation is a possibility, you should consider counter measures in the permit in which you establish the source's synthetic minor status. This might contain a commitment to remain a synthetic minor for at least a specified period and/or to comply with the MACT standard upon becoming a major source or shortly thereafter. We solicit comment on the necessary safeguards and the bases for requiring them in order to assure appropriate implementation of this approach.

6.4.3 Alternative Operating Scenarios Involving New Capacity

Other mechanisms are available (currently only in the context of EPA pilot projects) for use in printers' title V permits to increase their operational flexibility through the expansion of existing capacity. Printing facilities and you should coordinate with their EPA Regional Office to determine which approaches, such as advance approval mechanisms, are available under your current rules and in the particular source situation to provide more operational flexibility with no less environmental protection.

Through advance approval, for example, you may be able to facilitate approval of certain categories of equipment changes anticipated by the facility during the life of the permit. Advance approval means the authorization in a permit to make future changes anticipated at the source without prior permit revision or any additional approval from you. In other words, the permit contains terms to identify and assure compliance with all requirements (e.g., NSR, NSPS, SIP, etc.) that are applicable for the advance approved changes. It is important to distinguish the conceptual difference between a

permit with an advance approval and a permit that merely anticipates certain changes through "smart permit" writing. Both involve writing a permit so that certain changes at the facility "fit" within the terms of the permit – in other words, the permit continues to assure compliance with all applicable requirements that have been incorporated into the permit, even after the change. However, the ability to anticipate a change through drafting of a "smart permit" does not extend to situations where a new requirement is triggered by the change and/or where a new capacity is added.

Advance approval may increase a facility's ability to respond to customer demands; and helps to reduce permit processing burden. Listed below are examples of changes frequently encountered at printing facilities. These activities describe anticipated changes for which the printing industry would like to receive advance approval.

Expansion Activities

- Build a new facility
- Add to a building for future expansion
- Prepare foundation for press or other hardware installation
- Sign purchase agreement for new equipment
- Receive delivery of new equipment
- Add a new press at an existing facility
- Add a new insignificant source at a facility

Replacement or Upgrade Activities

- Replace an existing press with one of comparable throughput capacity
- Replace an existing press with one of greater throughput capacity
- Rebuild an existing press to return to original specifications
- Rebuild an existing press to increase throughput
- Replace an existing pollution control device
- Add a new printing unit to an existing press
- Add a new coating unit to an existing press
- Add a new adhesive applicator to an existing press
- Changes to rewind end including adding cutters, splitters, rewind stands
- Modifying dryers through longer (extended) drying zones or changes in heat source (e.g., steam to gas and visa versa)

Activities With No or Limited Pollutant Emissions Increases (or Emissions Decreases)

- Add a new binding line to an existing facility
- Interchange portable units between presses or bindery lines (e.g., ink jet printers)
- Remove existing presses, press units, coating units, adhesive applicators, etc.
- Change formulation or HAP content of input materials (inks, coatings, adhesives, fountain solution, etch solution, cleaning solvents, etc.)
- Upgrade of a control system

- Installation of a permanent total enclosure
- Addition of byproducts paper (or other substrate) collection and baling systems
- Addition of pre-press equipment - photoprocessing, platemaking, proofing, cylindermaking, etc.
- Addition of ink or solvent storage tanks
- Addition or replacement of fuel combustion equipment - dryers, boilers, space heating, etc.

Activities Related to Existing Equipment Utilization

- Increase production activity on existing presses
- Change compliance options (e.g., compliant materials vs. add-on controls)
- Switch activity among presses at a facility

We discuss the process used in pilot projects for establishing an advance approval, including ones for non-applicability limits, in detail in draft White Paper Number 3 (EPA, 2000). Therein, we stated that to be approvable, a title V permit containing an advance approval must include:

(1) A description that defines the scope and extent of the advance approved changes;
(2) The relevant applicable requirements that apply to the advance approved changes;
(3) Appropriate monitoring, recordkeeping, and reporting;
(4) Additional terms as needed to assure compliance with requirements at all times, including any terms, as necessary, to link the changes to their applicable requirements;
(5) Other terms to assure that requirements not appropriate for advance approval do not apply to the advance approved changes; and
(6) Terms describing whether and to what extent the permit shield, if offered under your part 70 program, applies to the advance approved changes.

Of course, we recognize that the level of detail in describing the changes and the degree of monitoring and other safeguards can vary depending on the situation. In the absence of any final guidance governing the design and implementation of flexible air permits, you should coordinate with your EPA Regional Office to explore which changes can be advance approved in the context of a pilot project.

CHAPTER 7
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