Office of Compliance Assistance and Pollution Prevention

Permit-by-Rule User's Guide for Small and Midsize Printing Facilities

Office of Compliance Assistance and Pollution Prevention

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Introduction

The purpose of this user's guide is to provide the printing industry with information and guidance on the proper use of the air pollution permit-by-rule (PBR) provisions specified by Ohio Administrative code **3745-31-03(A)(4)(k)** and **(l)**. These provisions exempt printing operations at small or midsize facilities from traditional permits-to-install and permits-to-operate, but do require compliance with the appropriate requirements specified in the PBR provisions.

About this updated version....

The version (December 2008) of this guide contains the June 30, 2008 version of the PBR rule OAC 3745-31-03(A)(4) that removed the emission limits and recordkeeping requirements for "photochemically reactive materials" regulated under OAC 3745-21-07 and references the new permit-to-install and operate (PTIO) program.

This guide supercedes the previous January 2006 version.

Disclaimer:

This guide is intended to be a tool to help printing facilities understand and comply with the permit-by-rule provisions. It **does not** include a comprehensive listing of all environmental regulations that may be applicable to a printing facility. A comprehensive listing would be dependent on regulatory and business-specific factors, which are beyond the scope of this guide. This guide discusses the specific permit-by-rule provisions for air pollution permitting exemptions under the new PBR regulations and further company research on requirements not covered by this guide, such as for hazardous waste disposal, may be necessary. Use of this guide is not a guarantee that a company meets all applicable state and federal regulations. It is a tool to be used only for understanding the permit-by-rule provisions.

General Information - Questions & Answers

What is a permit-by-rule (PBR)?

A permit-by-rule (PBR) is a specific permit exemption a company may use to exempt an air pollution source from the air permit process, but not from the applicable air pollution regulations and compliance requirements.

The PBR contains qualifying criteria, emission limitations, conditions for operation and requirements for record keeping and reporting. The air pollution source or facility must continually meet all of the PBR criteria to qualify for the PBR. Ohio EPA retains the authority to revoke a company's ability to operate under the PBR provisions and to require the company to obtain traditional permits.

How does a PBR differ from an ordinary permit?

Under traditional air permitting regulations, many air pollution sources, such as printing presses, must obtain individual air pollution permits from Ohio EPA. A permit-to-install (PTI) is required before installing the air pollution source or press. Once the PTI is issued and prior to its expiration, a renewable permit-to-operate (PTO) must be obtained for continued operation of the source or press lines after installation. An individual PTI and PTO is required for each source or press line.

The PBR exempts these air pollution sources from the PTI and PTO process and functions as both the installation and operating permit for the source or press line(s). However, the printer must continually meet all of the PBR criteria. If the printer can no longer comply with the conditions of the PBR, the company must apply for a traditional PTI and/or PTO. **NOTE: In July 2008, the Ohio EPA combined the PTI and PTO into a single permit, known as a permit-to-install and operate, or PTIO.**

What are the benefits of a PBR?

Since printers qualifying for PBRs are exempt from obtaining a PTI, installation of new equipment can be expedited. In addition, there are no associated fees under the PBR program.

The PBR puts all air pollution requirements in one place, saving time and money in evaluating potential environmental protection agency requirements. The PBRs also contain simplified record-keeping and reporting requirements as compared to traditional permits.

Can a printer that is operating a source according to an existing PTI or PTO switch to the PBR?

Yes. The printer must submit a written request to Ohio EPA to revoke the affected permits and must agree to meet all qualifying and operating conditions of the PBR. Ohio EPA will then make a final written determination on the request. If approved, the company can begin operating according to the PBR on the date the existing PTI or PTO is revoked. The PBR notification form included in this guide contains a section to request that applicable permits be revoked.

Keep in mind that in some cases, the PBR conditions might impose more stringent limitations on the facility than those specified in their current permits. It's important for the company to evaluate whether the PBR option is advantageous for their facility.

What printing facility operations are covered by the PBR?

The PBR covers all pressroom equipment, including all press operations (makeready, printing runs, and press cleaning), in-line or off-line coating, adhesive/binding operations, pre-press activities such as plate making or screen making and any other press-related activities that involve the use of materials that contain volatile organic compounds (VOCs) and Hazardous Air Pollutants (HAPs). The PBR covers all of these operations at the facility. **However, any press that utilizes rotogravure printing, or any press that has a pollution control device, such as a thermal oxidizer, is not eligible for coverage under the PBR.**

General Information - Questions & Answers

What operations are not covered by the PBR?

The PBR is mainly concerned with pressroom emissions that typically account for the majority of total emissions from a printing facility. Other sources of air pollution at the facility, such as fuel-fired heaters or boilers, post press equipment, parts washers using solvent, solvent recycling units, etc., may require air permits unless the equipment or activity is specifically exempted. See the Appendix for a list of common equipment exempted from air permits.

The PBR only applies to air pollution and does not cover issues related to proper disposal of wastes, discharges to the local sewer system or other regulatory requirements.

Permit-by-Rule Requirements, Emissions & Material Usage Limits Summary

To summarize, a printer choosing the PBR option is required to:

- submit a written notification to Ohio EPA requesting permission to install and/or operate under the PBR;
- maintain the records required by the PBR and make them available to an Ohio EPA representative upon request;
- notify Ohio EPA of administrative changes or when the printer would change PBR categories (for example, a small facility increases emission enough or uses enough input materials so that it becomes a midsize facility); and
- notify Ohio EPA in the event any of the PBR emission limitations or material usage restrictions are exceeded.

Small Printing Facility PBR

Type of printing	Annual facility emission limit	Annual material usage limit
Lithographic, heatset	10 tpy VOC	20,000 lbs of ink, cleaning solvent and fountain solution additives combined
Lithographic, non-heatset	10 tpy VOC	2,850 gallons of cleaning solvent and fountain solution additives combined
Digital	10 tpy VOC	2,425 gallons of inks, clean-up solutions and other solvent-containing materials combined
Screen	10 tpy VOC	2,850 gallons of inks, clean-up solutions and other solvent-containing materials combined
Letterpress	10 tpy VOC	2,850 gallons of inks, clean-up solutions and other solvent-containing materials combined
Flexographic, water-based or UV	10 tpy VOC	80,000 lbs. of water-based inks, coatings, and adhesives combined
Flexographic, solvent-based	10 tpy VOC	20,000 lbs. of solvent from inks, dilution solvents, coatings, cleaning solutions and adhesives combined
All small printing facilities	5 tpy single HAP	1,333 gallons of materials containing the same single HAP
	10 tpy total HAP	2,667 gallons of materials containing any HAPs.

Mid-size Printing Facility PBR

Type of printing	Rolling 12-month facility emission limit	Rolling 12-month rolling material usage limit
Lithographic, heatset	25 tpy VOC	50,000 lbs of ink, cleaning solvent and fountain solution additives combined
Lithographic, non-heatset	25 tpy VOC	7,100 gallons of cleaning solvent and fountain solution additives combined
Digital	25 tpy VOC	6,000 gallons of inks, clean-up solutions and other solvent-containing materials combined
Screen	25 tpy VOC	7,100 gallons of inks, clean-up solutions and other solvent-containing materials combined
Letterpress	25 tpy VOC	7,100 gallons of inks, clean-up solutions and other solvent-containing materials combined
Flexographic, water-based or UV	25 tpy VOC	200,000 lbs. of water-based inks, coatings, and adhesives combined
Flexographic, solvent-based	25 tpy VOC	50,000 lbs. of solvent from inks, dilution solvents, coatings, cleaning solutions and adhesives combined
All midsize printing facilities	5 tpy single HAP	1,333 gallons of materials containing the same single HAP
	12.5 tpy total HAP	3,333 gallons of materials containing any HAPs

Permit-by-Rule Requirements for Small and Midsize Printing Facilities

The following table provides both the actual text of the PBR rule on the left side of the page and short explanations and tips to aid understanding on the shaded right side. For a quick understanding of your PBR obligations, you can scan the right side of the table only. The regulatory text is taken directly from selected paragraphs of OAC rule 3745-31-03(A)(4). Copies of this rule are available at **www.epa.state.oh.us/dapc/regs/regs.html**.

Under the PBR rules, there are three distinct sections:

1) Paragraph (A)(4): Overall requirements that exempt PBR categories from air permits, but not air pollution regulations;
2) Paragraph (A)(4)(a): General provisions that specify notification, record retention, and reporting requirements for all PBR categories; and
3) Paragraph (A)(4)(k): Specific requirements for small printing facilities, or Paragraph (A)(4)(l): Specific requirements for mid-size printing facilities.

Permit-by-Rule Text	Explanation
(A)(4) Permit-by-Rule Exemptions	
The following air contaminant sources are exempt from the requirement to obtain a permit-to-install or PTIO. These exemptions are valid only as long as the owner or operator complies with all of the permit-by-rule general provisions, meets the qualifying criteria defined in the applicable permit-by-rule and complies with all of the requirements under the applicable permit-by-rule specific provisions. Upon request by the director, the owner or operator of a facility that has exceeded the permit-by-rule thresholds or that the director finds is causing or may cause a public nuisance in violation of rule 3745-15-07 of the Administrative Code shall submit an application for a permit-to- install or PTIO.	Printers registering for the PBR are exempt from permit-to-install (PTI) or a permit-to-install and operate (PTIO) for equipment that is covered by the PBR. You must continually operate according to the PBR conditions and keep the required records to remain eligible.
These exemptions do not, however, exempt any air contaminant source from requirements of the federal Clean Air Act, including being considered for purposes of determining whether a facility constitutes a major source or is otherwise regulated under Chapter 3745-77 of the Administrative Code or any requirement to list insignificant activities and emission levels in a Title V permit application. In addition, this rule does not relieve the owner or operator from the requirement of including the emissions associated with the exempt sources into any major NSR permitting action.	Ohio EPA can request you to get a permit if your PBR facility is causing a nuisance, such as neighborhood property damage or demonstrated health effects. Although most PBR facilities will not be Title V facilities, any Title V facility using a PBR must identify the presses covered by the PBR in their Title V operationg permit and include the emissions in the required reports and certifications.
(A)(4)(a) General Provisions	
These general provisions apply to all owner or operators who are utilizing one or more of the permit-by-rule exemptions listed in paragraphs (A)(4)(b) through (A)(4)(l) of this rule.	There are 11 PBR categories. Only the small printing PBR, paragraph (A)(4)(k), and mid-size printing PBR, paragraph (A)(4)(l), are included in this guide.

Permit-by-Rule Requirements for Small and Midsize Printing Facilities

Permit-by-Rule Text	Explanation
Recordkeeping Requirements - 3745-31-03(A)(4)(a)(i)	
The owner or operator shall collect and maintain the records described for each air contaminant source exempted under paragraph (A)(4) of this rule and these records shall be retained in the owner or operator's files for a period of not less than five years, unless otherwise specified in each exemption. These records shall be made available to the director or any authorized representative of the director for review during normal business hours.	You must maintain the records required by the PBR for five years and make them available to Ohio EPA upon request.
Notification Requirements for New Installations - 3745-31-03(A)(4)(a)(ii)	
For the purposes of this paragraph, a new permit-by-rule air contaminant source is an air contaminant source installed after the promulgation date of any new applicable permit-by-rule or July 29, 2005, whichever comes later. The owner or operator of a new permit-by-rule air contaminant source electing to use an applicable permit-by-rule exemption shall submit a written notification in a form and manner prescribed by the director prior to installation of the air contaminant source. This notification, or form, shall be submitted to the appropriate Ohio environmental protection agency district office or local air agency, and shall contain the following information, at a minimum: (a) The owner or operator's and the facility contact's name; (b) The facility mailing address and telephone number; (c) The location of the air contaminant source(s); (d) A description of the air contaminant source, including any pollution control(s); and (e) A statement by the owner or operator that indicates which permit-by-rule applies to the air contaminant source.	The printing PBRs became available on July 29, 2005. You must notify Ohio EPA if you want to operate under the PBR. Use the specific notification form in the Appendix or download it at **www.epa.state.oh.us/dapc/pbr/permitbyrule.html**.
Notification Requirements for Existing Permitted Sources - 3745-31-03(A)(4)(a)(iii)	
The owner or operator of an air contaminant source which is operating under an existing permit-to-install, PTIO and/or permit-to-operate may continue to operate in compliance with that permit or may submit a written request to the Ohio environmental protection agency to revoke any such individual permit or permits and to allow the air contaminant source to operate under the permit-by-rule provisions. The director may revoke a permit-to-install, PTIO and/or permit-to-operate if the permittee requests revocation, agrees to meet all permit-by-rule qualifying and operating conditions, and the director determines that the revocation will not result in the violation of any applicable laws. When a permittee requests a revocation pursuant to this paragraph, the director, without prior hearing, shall make a final determination on the request and inform the permittee in writing. If the director agrees with the request to operate under the permit-by-rule, then the permit-by-rule becomes applicable to the permittee on the date the existing permit-to-install, PTIO and/or permit-to-operate are revoked.	If you have existing air permits for your presses, you can switch them to PBR. Use the PBR notification form to request authorization to operate under the PBR and to revoke existing permits. Your Ohio EPA district office or local air agency will evaluate your request and notify you in writing if approved. You must wait until Ohio EPA revokes your existing permits before you can operate under the PBR.

Permit-by-Rule Text	Explanation
Notification Requirements for Existing Permit-by-Rule Sources - 3745-31-03(A)(4)(a)(iv)	
The owner or operator of an air contaminant source that is operating under one of the permit-by-rules that existed prior to July 29, 2005 (emergency electrical generators, injection and compression molding, crushing and screening plants, soil-vapor extraction and soil-liquid extraction) and desires to continue operating under the permit-by-rule shall submit a written notification which contains all of the elements required in paragraph (A)(4)(a)(ii) of this rule. This notification shall be submitted to the appropriate Ohio environmental protection agency district office or local air agency and shall be submitted by July 29, 2006.	**NOTE:** This provision does not apply to printers since they were not an "existing" PBR category **before July 29, 2005**.
Records Retention Requirements - 3745-31-03(A)(4)(a)(v)	
Each record of any monitoring data, testing data, and support information required pursuant to a specific permit-by-rule shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the specific permit-by-rule. Such records may be maintained in computerized form.	You must keep PBR records for **five years**.
Reporting Requirements - 3745-31-03(A)(4)(a)(vi)	
The owner or operator shall submit required reports in the following manner: (a) Reports of any monitoring and/or record keeping information required by a specific permit-by-rule shall be submitted to the appropriate Ohio environmental protection agency district office or local air agency. (b) Except as otherwise may be provided in a permit-by-rule specific reporting requirements paragraph of a specific permit-by-rule, a written report of any deviations (excursions) from emission limitations, operational restrictions, qualifying criteria, and control equipment operating parameter limitations that have been detected by the testing, monitoring, and record keeping requirements specified in the permit-by-rule shall be submitted to the appropriate Ohio environmental protection agency district office or local air agency within thirty days of the date the deviation occurred. The report shall describe the specific limitation and/or operational restriction exceeded, the probable cause of such deviation, and any corrective actions or preventive measures that have been or will be taken.	Submit reports to your Ohio EPA district office or local air agency. The small printing facility PBR has a "Permit-by-Rule Specific Reporting Requirements" paragraph. It requires you to re-notify if switching to the mid-size facility PBR. You must report any exceedance of a PBR limit or condition such as emissions above the threshold to your Ohio EPA district office or local air agency within **30 days**.
Scheduled Maintenance/Malfunction Reporting - 3745-31-03(A)(4)(a)(vii)	
Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of rule 3745-15-06 of the Administrative Code. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio environmental protection agency district office or local air agency in accordance with paragraph (B) of rule 3745-15-06 of the Administrative Code. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is served by such control system(s).	This general requirement applies to any company that operates air pollution control equipment. It does not affect printers using the PBR since their presses cannot have the control systems mentioned.

Permit-by-Rule Text	Explanation

Small Printing Facility Permit-by-Rule - 3745-31-03(A)(4)(k)

Qualifications - 3745-31-03(A)(4)(k)(i)

A printing facility that meets the following qualifications is eligible to use this permit-by-rule:

(a) The facility has one or more printing lines which utilize only the screen, digital, flexographic, letterpress, non-heatset lithographic, or heatset lithographic printing processes, and which do not utilize add-on emissions control equipment.

(b) The facility emits no more than ten tons of VOCs, five tons of a single hazardous air pollutant (HAP) and ten tons of combined HAPs in any calendar year as demonstrated by either calculating actual facility-wide emissions, using methods approved by the Ohio environmental protection agency, or by electing to comply with the material usage limitations specified in paragraph (A)(4)(k)(i)(c) of this rule.

(c) In lieu of calculating emissions to demonstrate compliance with the annual facility emission limitations specified in paragraph (A)(4)(k)(i)(b) of this rule, the owner or operator may elect to qualify the facility for this permit-by-rule by meeting the following material usage limitations for all materials employed at the facility in any calendar year:

(i) Uses no more than one thousand three hundred thirty three gallons of materials containing the same single HAP and no more than two thousand six hundred sixty-seven gallons of materials containing any HAPs.

(ii) Operates only heatset offset lithographic printing lines and uses no more than twenty thousand pounds of ink, cleaning solvent, and fountain solution additives combined; or

(iii) Operates only non-heatset offset lithographic printing lines and uses no more than two thousand eight hundred fifty gallons of cleaning solvent, and fountain solution additives combined; or

(iv) Operates only digital printing lines and uses no more than two thousand four hundred twenty-five gallons of solvent from inks and clean-up solutions and other solvent-containing materials combined; or

(v) Operates only screen or letterpress printing lines and uses no more than two thousand eight hundred fifty gallons of solvent from inks and clean-up solutions and other solvent-containing materials combined; or

(vi) Operates only water-based or ultraviolet (UV)-cured material flexographic printing lines and uses no more than eighty thousand pounds of water-based inks, coatings, and adhesives, combined; or

(vii) Operates only solvent based material flexographic printing lines and uses no more than twenty thousand pounds of solvent from inks, dilution solvents, coatings, cleaning solutions and adhesives, combined; or

(viii) Operates any combination of screen, digital, flexographic, letterpress, non-heatset lithographic, or heatset lithographic printing lines and the facility uses no more than the most stringent of the material usage limitations contained in paragraphs (A)(4)(k)(ii) through (A)(4)(k)(vii) above for the type of units at the facility.

Rotogravure printing and presses with pollution control devices such as thermal oxidizers are not eligible for PBR.

The tons per year emission limits are for the whole facility. You can either calculate your emissions or stay under the total material usage limits each year. See the Appendix for how to calculate emissions.

Total annual usage limits depend on the type of material and the printing method used.

If you elect to use the material usage limits, you must meet **all three** of these limits:

• 1,333 gallons of materials containing the same HAP; and

• 2,667 gallons of materials containing any HAPs; and

• the overall usage limit for your method of printing.

(HAP = hazardous air pollutant)

Check the material's MSDS for HAP content or contact the supplier. The Appendix contains a list of the specific HAP compounds.

A facility having a combination of printing methods must comply with smallest usage limit OR can calculate emissions instead.

For example, if a company operates both screen printing and digital equipment, the total volume of material used by both screen and digital presses need to be below the usage limit for digital, since it is smaller than the usage limit for screen printing.

Permit-by-Rule Requirements for Small and Midsize Printing Facilities

Permit-by-Rule Text

Explanation

Applicable Emission Limitations and/or Control Requirements - 3745-31-03(A)(4)(k)(ii)

(a) The applicable rules, emissions limitations and control requirements that apply to the facility subject to this permit-by-rule are defined in the following table:

Applicable Rule(s)	Applicable Emission Limitation/Control Requirements
Paragraph (A)(3) of rule 3745-31-05 of the Administrative Code	Facility emissions shall not exceed ten tons of VOC, five tons of a single HAP and ten tons of combined HAPs for any calendar year.
Paragraph (Y)(2)(b) of rule 3745-21-09 of the Administrative Code (flexographic presses only)	Exempt from the requirements of paragraph (Y)(1) of rule 3745-21-09 of the Administrative Code since the qualifying criteria ensure that the combined maximum usage of coatings and inks in all presses at the facility is less than on hundred forty-eight tons per year.

This table lists the Ohio air pollution rules applicable to printers.

These are ANNUAL emission limits for the whole facility.

The qualifying criteria of the PBR ensure that the total usage of coatings and inks does not exceed **148 tons per year** or that total facility VOC emissions do not exceed **100 tons per year**. Therefore, more stringent requirements, such as ink solvent content limits or add-on control systems, are not necessary for flexographic operations.

Monitoring and/or Record Keeping Requirements - 3745-31-03(A)(4)(k)(iii)

(a) The owner or operator of the printing facility shall maintain annual records at the facility that list the following information for each graphic arts material (ink, fountain solution additives, clean-up solvents, etc.) employed in the facility during each calendar year:

(i) The name and identification number of each material employed.

(ii) The quantity of each material employed, in gallons or pounds.

(iii) The OC content of each material, in pounds per gallon, or percent, by weight.

(iv) The individual HAP content for each HAP-containing material, in pounds of individual HAP per gallon of material.

(v) The total combined HAP content of each material, in pounds of total HAP per gallon of material.

(vi) The annual summation of usage in gallons, or pounds, of each graphic arts material if the facility elects to demonstrate compliance with the material usage limitations specified in paragraph (A)(4)(k)(c) of this rule; or

(vii) The annual summation of total facility emissions of VOC, individual HAP, and combined HAP from all graphic arts materials employed if the facility elects to calculate actual emissions to demonstrate compliance with the emission limitations specified in paragraph (A)(4)(k)(b) of this rule.

You are required to keep annual materials usage records. EPA inspectors will want to see these if they inspect your facility.

Check the material's MSDS for VOC and HAP content or contact the supplier.

Total annual usage of all materials.

Calculate emissions annually if choosing this option.See Ohio EPA Engineering Guides #56 and #68 or the Appendix for how to calculate emissions. Engineering Guides can be found at **www.epa.state.oh.us/dapc/engineer/eguides.html**.

Permit-by-Rule Text	Explanation
Permit-by-Rule Specific Reporting Requirements - 3745-31-03(A)(4)(k)(iv) (a) If a small printing facility exempt under paragraph (A)(4)(k) of this rule should elect to operate under the permit-by-rule provisions for a midsize printing facility specified by paragraph (A)(4)(l) of this rule, the owner or operator of such facility shall comply with the notification requirements of paragraph (A)(4)(a)(ii) of this rule prior to operating under the permit-by-rule provisions for midsize printing facilities.	If you're switching from a small printing PBR to a mid-size PBR, a new notification form to Ohio EPA is required. More record keeping and limits for cleaning solutions are required under the mid-size PBR.
Testing Requirements - 3745-31-03(A)(4)(k)(v) (a) Compliance with the annual material usage limitations shall be based upon the record keeping requirements specified in paragraph (A)(4)(k)(iii)(a) of this rule. (b) For screen, letterpress, and non-heatset lithographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitations, in gallons, multiplied by a maximum VOC content of 7.0 pounds per gallon, and divided by two thousand pounds per ton. For digital printing, compliance with the annual VOC emission limitation is based on the annual material usage limitations, in gallons, multiplied by a maximum VOC content of 7.5 pounds per gallon, and divided by two thousand pounds per ton. For water-based or UV-cured flexographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitation, in pounds, multiplied by an assumed maximum VOC content of twenty five percent, and divided by two thousand pounds per ton. For solvent-based flexographic printing and heatset lithographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitation, in pounds, multiplied by an assumed maximum VOC content of one hundred percent, and divided by two thousand pounds per ton. For all printing types, compliance with the annual HAP emission limitations is based on the annual material usage limitations specified in paragraph (A)(4)(k)(i)(c)(i) of this rule, in gallons, multiplied by a maximum HAP content of 7.5 pounds per gallon, and divided by two thousand pounds per ton. (c) An owner or operator of the facility electing to demonstrate compliance with the annual VOC, HAP, and combined HAP emission limitations by calculating the actual facility emissions may use the actual material VOC contents and usage rates from records required by paragraph (A)(4)(k)(iii) of this rule. The calculations shall be performed annually using methods approved by the Ohio environmental protection agency.	Your usage records should be able to show how you comply with the material usage limits. This is background information to explain how the facility-wide emission limits of **10 tons/yr** VOC, **5 tons/yr** single HAP and **10 tons/yr** combined HAPs relate to the material usage limits. These calculations assume high VOC content materials and are very conservative to allow for a margin of error.

Permit-by-Rule Text	Explanation

Midsize Printing Facility Permit-by-Rule - 3745-31-03(A)(4)(l)

Qualifications - 3745-31-03(A)(4)(l)(i)

A printing facility that meets the following qualifications is eligible to use this permit-by-rule:

(a) The facility has one or more printing lines which utilize only the screen, digital, flexographic, letterpress, non-heatset lithographic, or heatset lithographic printing processes, and which do not utilize add-on emissions control equipment.

Rotogravure printing and presses with pollution control devices, such as thermal oxidizers, are not eligible for PBR

(b) The facility emits no more than twenty-five tons of VOCs, five tons of a single HAP and 12.5 tons of combined HAPs in any rolling, 12-month period as demonstrated by either calculating actual facility-wide emissions, using methods approved by the Ohio environmental protection agency, or by electing to comply with the material usage limitations specified in paragraph (A)(4)(l)(i)(c) of this rule.

The tons per year emission limits are for the whole facility. You can either calculate your emissions or stay under the total material usage limits each year. A rolling 12-month period begins each month as the last month's usage is added to the previous 11 months. See the Appendix for how to calculate emissions.

(c) In lieu of calculating emissions to demonstrate compliance with the facility emission limitations specified in paragraph (A)(4)(l)(i)(b) of this rule, the facility may elect to qualify for this permit-by-rule by meeting the following material usage limitations for all materials employed at the facility in any rolling, twelve-month period:

Total annual usage limits depend on the type of material and the printing method used.

If you elect to use the material usage limits, you must meet **all three** of these limits:

(i) Uses no more than one thousand three hundred thirty-three gallons of materials containing the same single HAP and no more than three thousand three hundred thirty-three gallons of materials containing any HAPs.

• 1,333 gallons of materials containing the same HAP; and

(ii) Operates only heatset offset lithographic printing lines and uses no more than fifty thousand pounds of ink, cleaning solvent, and fountain solution additives combined; or

(iii) Operates only non-heatset offset lithographic printing lines and uses no more than seven thousand one hundred gallons of cleaning solvent and fountain solution additives combined; or

• 3,333 gallons of materials containing any HAPs; and

(iv) Operates only digital printing lines and uses no more than six thousand gallons of solvent from inks and clean-up solutions and other solvent containing materials combined; or

(v) Operates only screen or letterpress printing lines and uses no more than seven thousand one hundred gallons of solvent from inks and clean-up solutions and other solvent containing materials combined; or

• the overall usage limit for your method of printing.

Check the material's MSDS for HAP content or contact the supplier. The Appendix contains a list of the specific HAP compounds.

(vi) Operates only water-based or ultraviolet (UV)-cured material flexographic printing lines and uses no more than two hundred thousand pounds of water-based inks, coatings, and adhesives, combined; or

(vii) Operates only solvent based material flexographic printing lines and uses no more than fifty thousand pounds of solvent from inks, dilution solvents, coatings, clean-up solutions and adhesives, combined; or

(viii) Operates any combination of screen, digital, flexographic, letterpress, non-heatset lithographic, or heatset lithographic printing processes and the facility uses no more than the most stringent of the material usage limits contained in paragraphs (A)(4)(l)(ii) through (A)(4)(l)(vii) above for the type of units at the facility.

A facility having a combination of printing methods must comply with smallest usage limit OR can calculate emissions instead.

Permit-by-Rule Text	Explanation

Qualifications - 3745-31-03(A)(4)(l)(i)

(d) The facility employs cleanup solutions which meet all of the following standards:

(i) Cleanup solutions either shall not exceed thirty percent VOC, by weight, as applied, or shall have a VOC composite partial pressure of ten millimeters of mercury (mmHg) or less at twenty degrees Celsius (sixty-eight degrees Fahrenheit).

(ii) Cleanup solutions shall be kept in covered containers during transport and storage.

(iii) Shop towels contaminated with cleanup solution shall be kept, when not in use, in covered containers.

(iv) The use of cleanup solutions not meeting the condition in paragraph (A)(4)(l)(i)(d)(i) of this rule shall not exceed a combined total of one hundred ten gallons in any rolling, twelve-month period.

NOTE: Specifications for cleanup solutions are additional requirements for midsize facilities. Consult MSDS or supplier to ensure that cleaning solutions meet these formulation criteria.

Applicable Emission Limitations and/or Control Requirements - 3745-31-03(A)(4)(l)(ii)

(a) The applicable rules, emission limitations, and control requirements that apply to the facility subject to this permit-by-rule are defined in the following table:

Applicable Rule(s)	Applicable Emission Limitation/Control Requirements
Paragraph (A)(3) of rule 3745-31-05 of the Administrative Code	Facility emissions shall not exceed twenty-five tons of VOC, five tons of a single HAP and 12.5 tons of combined HAPs for any rolling, twelve-month period.
Paragraph (Y)(2)(b) of rule 3745-21-09 of the Administrative Code (flexographic presses only)	Exempt from the requirements of paragraph (Y)(1) of rule 3745-21-09 of the Administrative Code since the qualifying criteria ensure that the combined maximum usage of coatings and inks in all presses at the facility is less than one hundred forty-eight tons per year.

These are rolling, 12-month emission limits for the whole facility, not per calendar year as with the small printing PBR.

The qualifying criteria of the PBR ensure that the total usage of coatings and inks does not exceed **148 tons per year** or that total facility VOC emissions do not exceed 1**00 tons per year**. Therefore, more stringent requirements, such as ink solvent content limits or add-on control systems, are not necessary for flexographic operations.

Monitoring and/or Record Keeping Requirements - 3745-31-03(A)(4)(l)(iii)

(a) The owner or operator of the printing facility shall maintain monthly records at the facility that list the following information for each graphic arts material (ink, fountain solution additives, cleanup solvents, etc.) employed in the facility:

(i) The name and identification number of each material employed.

(ii) The quantity of each material employed, in gallons or pounds.

(iii) The OC content of each material, in pounds per gallon, or percent by weight.

(iv) The individual HAP content for each HAP-containing material, in pounds of individual HAP per gallon of material.

(v) The total combined HAP content of each material, in pounds of combined HAP per gallon of material.

You are required to keep monthly materials usage records. EPA inspectors will want to see these if they inspect your facility.

Check the material's MSDS for VOC and HAP content or contact the supplier.

Permit-by-Rule Text	Explanation
Monitoring and/or Record Keeping Requirements - 3745-31-03(A)(4)(l)(iii)	
(vi) The rolling, twelve-month summation of usage in gallons of each graphic arts material employed if the facility elects to demonstrate compliance with the material usage limitations specified in paragraph (A)(4)(l)(i)(c) of this rule; or (vii) The rolling, twelve-month summation of total facility emissions of VOC, individual HAP, and combined HAP from all graphic arts materials employed if the facility elects to calculate actual emissions to demonstrate compliance with the emission limitations specified in paragraph (A)(4)(l)(i)(b) of this rule.	Add the new month's usage total to the previous 11 months for the rolling, 12-month period.
(vii) The rolling, twelve-month summation of total facility emissions of VOC, individual HAP, and combined HAP from all graphic arts materials employed if the facility elects to calculate actual emissions to demonstrate compliance with the emission limitations specified in paragraph (A)(4)(l)(i)(b) of this rule.	If you choose to calculate emissions, add each month's emissions to the emissions of the previous 11 months for the rolling, 12-month total. See Ohio EPA Engineering Guides #56 and #68 or Appendix for how to calculate emissions. Engineering Guides can also be found at **www.epa.state.oh.us/dapc/engineer/eguides.html**.
Testing Requirements - 3745-31-03(A)(4)(l)(iv)	
(a) Compliance with the rolling, twelve-month material usage thresholds and/or emission limitations shall be based upon the record keeping requirements specified in paragraph (A)(4)(l)(iii)(a) of this rule.	Your usage records should be able to show how you comply with the material usage limits.
(b) For screen, letterpress, and non-heatset lithographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitations, in gallons, multiplied by a maximum VOC content of 7.0 pounds per gallon, and divided by two thousand pounds per ton. For digital printing, compliance with the annual VOC emission limitation is based on the annual material usage limitations, in gallons, multiplied by a maximum VOC content of 7.5 pounds per gallon, and divided by two thousand pounds per ton. For water-based or UV-cured flexographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitation, in pounds, multiplied by an assumed maximum VOC content of twenty five percent, and divided by two thousand pounds per ton. For solvent-based flexographic printing and heatset lithographic printing, compliance with the annual VOC emission limitation is based on the annual material usage limitation, in pounds, multiplied by an assumed maximum VOC content of one hundred percent, and divided by two thousand pounds per ton. For all printing types, compliance with the annual HAP emission limitations is based on the annual material usage limitations specified in paragraph (A)(4)(l)(i)(c)(i) of this rule, in gallons, multiplied by a maximum HAP content of 7.5 pounds per gallon, and divided by two thousand pounds per ton.	This is background information to explain how the facility-wide emission limits of 25 tons/yr VOC, 5 tons/yr single HAP and 12.5 tons/yr combined HAPs relate to the material usage limits. These calculations assume high VOC content materials and are very conservative to allow for a margin of error.
(c) An owner or operator of the facility electing to demonstrate compliance with the annual VOC, HAP, and combined HAP emission limitations by calculating the actual facility emissions may use the actual material VOC contents and usage rates from records required by paragraph (A)(4)(l)(iii) of this rule. The calculations shall be performed using methods approved by the Ohio environmental protection agency.	

Appendix A - Glossary of Terms

Adhesive - any substance that is used to bond one surface to another surface.

Air contaminant source - each separate operation, or activity that results or may result in the emission of any air contaminant. This definition applies to operations or activities that emit air contaminants, whether regulated under Ohio law or regulated under the Clean Air Act.

Aqueous coating - a water-based surface coating applied directly over ink on a printed substrate for the purpose of enhancing or protecting the printed surface.

Cleaning solution - liquid solvents or solutions used to remove ink and debris from the operating surfaces of the printing press and its parts.

Clear coating - a varnish or any coating which is transparent or lacks pigment.

Coating or surface coating - a material applied onto or saturated within a substrate for decorative, protective or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, adhesives and inks.

Coating applicator - an apparatus used to apply a surface coating.

Day - a period of twenty-four consecutive hours beginning at midnight local time, or beginning at a time consistent with a facility's operating schedule.

Digital printing (direct-to-media printing) line - a printing line where the transfer of electronic files occurs directly from the computer to an electronically driven output device that prints the image directly on the selected media (substrate). Electronic images and four-color process images can be printed virtually any size.

Exempt solvent - any of the compounds which are specifically identified as not being volatile organic compounds. See definition of "Volatile organic compound" below.

Flexographic printing line - a printing line in which each roll printer uses a roll with raised areas for applying an image to the substrate. The image carrier on the roll is made of rubber or other flexible elastomeric material.

Fountain solution - a surface coating applied to the plate roll of an offset lithographic printing line for the purpose of wetting only the nonimage areas so that they are not ink receptive.

Fountain solution additives - volatile and non-volatile chemicals, alcohols, and other additives, which are blended with water to form the fountain solution used in the lithographic printing process.

Hazardous air pollutant (also denoted as "HAP") - any air pollutant listed in or pursuant to Section 112(b) of the Clean Air Act.

Ink - a coating applied by a roll printer.

Letterpress printing line - a printing process where the image area is raised relative to the nonimage area and the paste ink is transferred to the paper directly from the image surface without the use of an anilox roller.

Lithographic printing line - a printing line, except that the substrate is not necessarily fed from an unwinding roll, in which each roll printer uses a roll where both the image and nonimage areas are essentially in the same plane (planographic).

Appendix A - Glossary of Terms

Non-heatset - an offset lithographic printing process where the printing inks dry by oxidation and absorption without the use of heat. For the purposes of this chapter, ultraviolet-cured (UV) and electron beam-cured inks employed in an offset lithographic printing process are considered non-heatset.

Offset lithographic printing line - a lithographic printing line where the image is applied from a plate roll to an intermediate (blanket) roll and then transferred onto the substrate.

Organic compounds (also denoted as "OC") - any chemical compound containing carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates, ammonium carbonate, non landfill gas methane and ethane.

Printing line - an operation consisting of a series of one or more roll printers and any associated in-line roll coaters, in-line extrusion coaters, drying areas and ovens wherein one or more surface coatings are applied, dried, and/or cured. It is not necessary for an operation to have an oven or drying area in order to be included within this definition.

Roll coater - an apparatus in which a uniform layer of coating material is applied by means of a roll or rolls across the entire width of a moving substrate, which is fed from an unwinding roll.

Roll printer - an apparatus in which a surface coating is applied by means of a roll or rolls with only partial coverage across the width of a moving substrate, which is fed from an unwinding roll. The partial coverage results in the formation of words, designs or pictures on the substrate.

Rotogravure printing line - a printing line in which each roll printer uses a roll with recessed areas for applying an image to the substrate.

Screen printing line - a printing a process where the printing ink passes through a web or a fabric to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint.

Varnish coating - an oil-based surface coating applied directly over ink on a printed substrate for the purpose of enhancing or protecting the printed surface.

Appendix A - Glossary of Terms

Volatile organic compound (VOC) - any organic compound that participates in atmospheric photochemical reactions. **This includes any organic compound other than the following compounds:**

- Acetone, ethane, methane, methyl acetate, methyl chloroform (1,1,1-trichloroethane), methylene chloride, methyl formate, perchloroethylene (tetrachloroethylene), PCBTF (parachlorobenzotrifluoride) t-butyl acetate;
- Chlorofluorocarbons (CFCs): CFC-11, CFC-12, CFC-113, CFC-114, CFC-115;
- Hydrochlorofluorocarbons (HCHCs): HCFC-22, HCFC-31, HCFC-123, HCFC-123a, HCFC-124, HCFC-141b, HCFC-142b, HCFC-151a, HCFC-225ca, HCFC-225cb;
- Hydrofluorocarbons (HFCs): HFC-23, HFC-32, HFC-42-10mee, HFC-125, HFC-134, HFC-134a HFC-143a, HFC-152a, HFC-161, HFC 227ea, HFC-236ea, HFC-236fa, HFC-245ca, HFC-245ea, HFC-245eb, HFC-245fa, HFC-365mfc;
- Hydrofluorethers (HFEs): HFE-7000, HFE-7100, HFE-7200, HFE-7500;
- (CF3)2-CFCF2OCH3, (CF3)2-CFCF2OC2H5;
- Cyclic, branched, or linear completely methylated siloxanes;
- Any organic compound listed in 40 CFR 51.100(s)(1) or (s)(5); and
- Any class of perfluorocarbon compounds that consists of (a) cyclic, branched, or linear, completely fluorinated alkanes, (b) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations, (c) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations, or (d) sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

These compounds have been determined to have negligible photochemical reactivity. For purposes of determining compliance with emission limits, VOC will be measured by the approved test methods. Where such a method also inadvertently measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly reactive compounds when determining compliance with an emission standard.

Water-based ink/coating/adhesive - an ink, coating or adhesive with a VOC content less than or equal to ten per cent by weight as applied.

Appendix B - Air Permit Exemption List

Common equipment and activities exempt from air permits per OAC 3745-31-03(A)(1)*

- Fossil fuel-fired boilers, preheaters, air heaters, water heaters, or heaters used for other heat exchange media less than ten million British thermal units per hour burning only natural gas, distillate oil (with less than or equal to 0.5 per cent by weight sulfur), or liquid petroleum gas.

- Fossil fuel or wood fuel-fired boilers, preheaters, air heaters, or water heaters less than one million British thermal units per hour except units burning waste fuels or waste oil.

- Fossil fuel-fired furnaces or dryers less than ten million British thermal units per hour and burning only natural gas, distillate oil (with less than or equal to 0.5 per cent by weight sulfur), or liquid petroleum gas and the only emissions are from the products of combustion from fuel and water vapor and where no melting or refining occurs nor where any burning of any material occurs.

- Tumblers used for the cleaning or deburring of metal products without abrasive blasting.

- Equipment used exclusively for the packaging of lubricants or greases, and water-borne adhesives, coatings or binders.

- Equipment used exclusively for the mixing and blending of materials at ambient temperature to make water-borne adhesives, coatings or binders.

- Laboratory equipment and laboratory fume hoods used exclusively for chemical or physical analyses and bench scale laboratory equipment.

- Photographic process equipment by which an image is reproduced upon material sensitized to radiant energy.

- Equipment used for injection molding of resins where no more than one million pounds of resins (thermoplastic or thermosetting) per rolling twelve-month period are used in injection machines at the facility.

- Storage tanks for:

  (i) Inorganic liquids including water (at standard temperature and pressure) except for tanks storing acids as described in paragraph (*vii*); or

  (ii) Pressurized storage for inorganic compounds or propane, butane, isobutane, and liquid petroleum gases; or

  (iii) Liquids with a capacity of less than seven hundred gallons; or

  (iv) Organic liquids with a capacity of less than seventy-five cubic meters (19,815 gallons) and equipped with submerged fill, except gasoline storage tanks located at bulk gasoline plants which are subject to the requirements of paragraph (P) of rule 3745-21-09 of the Administrative Code; or

  (*v*) Organic liquids with a capacity greater than or equal to seventy-five cubic meters (19,815 gallons) but less than one hundred fifty-one cubic meters (39,894 gallons) storing a liquid with a maximum true vapor pressure, as defined in 40 CFR 60.111b, of less than 15.0 kilopascals (2.176 pounds per square inch absolute) and equipped with submerged fill; or

(vi) Organic liquids with a capacity greater than or equal to one hundred fifty-one cubic meters (39,894 gallons) storing a liquid with a maximum true vapor pressure, as defined in 40 CFR 60.111b, of less than 3.5 kilopascals (0.508 pounds per square inch absolute); or

(vii) Acids (as defined in the "Chemical Rubber Company (CRC) Handbook of Chemistry and Physics") stored in tanks less than or equal to 7,500 gallons capacity.

- Noncontinuous solvent recycling or reclaiming units with less than twenty gallons capacity.
- Nonheat-set or sheet-fed presses with an organic compound potential to emit of less than three tons per year.
- Solvent cold cleaners that meet the provisions of paragraph (O) of rule 3745-21-09 of the Administrative Code and have a liquid surface area less than or equal to ten square feet or a reservoir opening of less than six inches in diameter.
- Ink-jet printers.
- Grinding and machining operations, abrasive blasting, pneumatic conveying, and woodworking operations controlled with a fabric filter, scrubber, or mist collector designed to emit not more than 0.03 grains of particulate per dry standard cubic foot of exhaust gas with less than four thousand actual cubic feet per minute volume, venting inside a building, and emitting less than ten pounds per day of nonparticulate matter air contaminants.
- Uncontrolled grinding, machining, and sanding operations, abrasive cleaning operations (dry or wet), pneumatic conveying and woodworking operations that have no visible emissions, vent to the inside of a building and emit less than ten pounds per day of nonparticulate matter air contaminants.
- Parts washers and rinse tanks using detergent cleaners.
- All maintenance welding.
- Emergency electrical generators or emergency firefighting water pumps less than or equal to fifty horsepower that burn gasoline, natural gas, distillate oil (with less than or equal to 0.5 per cent by weight sulfur), or liquid petroleum gas.

*This is a partial list containing the exemptions for equipment most likely to be located at printing facilities. For the complete list, see OAC rule 3745-31-03(A)(1) or go to **www.epa.state.oh.us/dapc/regs/3745-31/3745-31-03f.pdf.**

Appendix C - PBR Notification Form and Instructions

PBR notification form and instructions on following pages

Division of Air Pollution Control

Permit by Rule Notification Form Small / Midsize Printing Facility

Submission of this form constitutes notice that the party identified in Section I of this form intends to be authorized to install/operate a source of air pollution according to the permit-by-rule provisions of OAC 3745-31-03(A)(4)(a) and (k) or (l). By submitting this form, the applicant agrees to operate and maintain the facility and equipment in accordance with the applicable permit-by-rule provisions. An original signature is needed and forms transmitted by fax will not be accepted. Complete all information as indicated by the instructions.

I. Applicant Information / Mailing Address

Company (Applicant) Name:_____

Mailing (Applicant) Address:_____

City:_____ State:_____ Zip Code:_____

Contact Person:_____ Phone:_____ Fax:_____ E-mail:_____

II. Facility / Site Location Information

Facility Name:_____

Facility Address / Location:_____ County:_____

City:_____ State:_____ Zip Code:_____

Facility Contact:_____ Phone:_____ Fax:_____ E-mail:_____

Ohio EPA Facility ID Number (10-digit) if known – *See Instructions*: _____

III. Reason for Submitting Notification:

☐ Initial request ☐ Equipment modification ☐ Ownership change

☐ Request for revocation of current permit - *See Instructions and complete additional information below*

Permit to install (PTI) or Permit to operate (PTO) number	Emission Unit ID (4-digit)
_____	_____
_____	_____

IV. Permit-by-Rule Provision Requested:

☐ Small Printing Facility per OAC 3745-31-03(A)(4)(k) ☐ Midsize Printing Facility per OAC 3745-31-03(A)(4)(l)

V. Printing Press Information:

Manufacturer of press	Model	Printing Method (e.g., flexographic, screen, lithographic, etc.)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

I certify under penalty of law that all statements or assertions of fact made in this notification are true and complete, and shall subject the signatory to liability under state laws forbidding false or misleading statements.

Applicant Name (Print):_____ Title:_____

Applicant Signature:_____ Date:_____

RETAIN A COPY OF THIS FORM FOR YOUR RECORDS

Mail the original, signed form to the appropriate Air Permit Review Agency (District Office/ Local Air Agency) for your county. (Please refer to the Air Permit Review Agency map in the attached instructions for mailing address).

Rev 05/07

For Ohio EPA Use Only:

PBR ID / FAC ID: _____

Date received _____

INSTRUCTIONS: Permit-by-Rule Notification Form
Small / Midsize Printing Facility

GENERAL INSTRUCTIONS:

Provide complete responses to all applicable questions. Submittal of an incomplete form will delay review and processing. If you need assistance, contact your Ohio EPA District Office or Local Air Agency for assistance. Contact the Ohio EPA, Division of Air Pollution Control at (614) 644-2270 for more information on contacting your local district office or go to http://www.epa.state.oh.us/dapc and select the topic "District Offices and Local Air Agencies". For more information on the permit-by-rule process, including online tracking of your notification form, go to http://www.epa.state.oh.us/dapc/pbr/permitbyrule.html

This is a notification form for a small or midsize printing facility which is intended to be installed and/or operated according the permit-by-rule provisions of OAC 3745-31-03(A)(4)(a) and (k) or (l). Each permit-by-rule provision covers all pressroom equipment, including all press operations (makeready, printing runs, and press cleaning), in-line or off-line coating, adhesive/binding operations, and any other press-related activities which involve the use of materials that contain volatile organic compounds (VOCs). The PBR covers all of these operations at the facility but does not cover other types of air pollution sources at the facility such as boilers, pneumatic trim handling systems, solvent reclaiming units, etc., that may require air pollution permits. The facility may also claim as exempt from permit-to-install requirements any individual nonheat-set or sheet-fed press having an organic compound potential to emit of less than three tons per year per OAC 3745-31-03(A)(1)(s). See Ohio EPA Engineering Guide #68 for guidance on this exemption. For copies of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website at http://www.epa.state.oh.us/dapc/regs/regs.html

I. Enter the company name, corporate name or other name and mailing address for the legal entity which owns or operates the facility specified in the permit-by-rule notification (example: Smith Printing, Inc. or Benson's Quick Press Co.). Provide the name of the individual to be contacted concerning questions about the notification form being submitted.

II. Enter the name and address for the facility at which the permit-by-rule units (equipment) operate (example: 45th Street Store, Smith Printing, Plant #4). This could be the same as the applicant name if the facility has no independent name. This address information is the location of the facility and not the mailing address, unless they are the same. Provide the name of the individual at the facility to be contacted concerning questions about the operation of the facility. Please specify the 10-digit Ohio EPA facility ID number if the facility has been issued air pollution permits from the Ohio EPA. If no permits exist, leave this blank. The facility ID number is contained in permits to install, permits to operate, or fee emission reports sent to the facility by Ohio EPA. If not known, contact the District Office or Local Air Agency with jurisdiction in the area the facility is located to confirm the facility ID number.

III. Check all applicable boxes. Check "Initial" if this is a new installation or the first request to operate under a permit-by-rule provision. Check "Permit-by-Rule Status Change" if the facility is switching from the Small Printing Facility PBR to the Midsize Printing Facility PBR or vice-versa. Check "Ownership change" if the facility has changed names, contact person, or has a new owner intending to operate under a permit-by-rule provision. If using this form to also request the revocation of existing permits, specify the permit numbers and all applicable 4-digit emission unit IDs (K001, K002, R001, etc.) These numbers are contained in permits to install, permits to operate, or fee emission reports sent to the facility by Ohio EPA. If not known, contact the District Office or Local Air Agency with jurisdiction in the area the facility is located to confirm the permit numbers and emission unit ID numbers.

IV. Check the appropriate box to indicate which PBR provision is being requested. The PBR provisions for small and mid-size printing facilities are different and contain different emission limitations, usage limits and record keeping requirements. The qualifying criteria for the small and midsize printing facility PBRs are included in these instructions.

V. Complete the appropriate information for each press at the facility. Consult the press manufacturer for model information if needed. Under "Printing Method", use any of the following designations:

Flexographic, water- based	Lithographic, heatset
Flexographic, solvent-based	Lithographic, non-heatset
Flexographic, UV-cured	Screen
Letterpress	Digital

Attach additional pages if reporting more than four presses.

Signature Requirements – This notification will be deemed incomplete if it is not signed by the appropriate signatory. Please see the following guidance at http://www.epa.state.oh.us/dapc/title_v/respoff.pdf for more information on who is authorized to sign this form or contact your Ohio EPA District Office or Local Air Agency.

Appendix D - Example Recordkeeping Forms

1) **Material Usage Record - Small Facility**

2) **Material Usage Record - Midsize Facility**

3) **HAP-Containing Materials Usage - Small Facility**

4) **HAP-Containing Materials Usage - Midsize Facility**

5) **Example HAP-Containing Materials Usage Sheet**

Note: The following forms are only a suggested recordkeeping format. Other formats, electronic or hard copy, can be used as long as the minimum data required by the PBR is maintained.

Small Printing Facility – Annual Material Usage Tracking Sheet

(tracks annual material usage and organic compound/HAP content for permit-by-rule)

Company: _____ **Usage Period [1]:** Beginning _____ (month/year)
Date: _____ Ending _____ (month/year)
Prepared By: _____

Chemical Category	Press Chemical Product [2]	Usage Amount [3]		OC Content [4]		Total HAP Content [5]	Individual HAP Content [6]
		(lbs)	(gal)	(% wt.)	(lbs/gal)	(lbs/gal)	(lbs/gal)
Ink & Varnish							
Cleanup Solvent							
Fountain Solution Additives							
In-Line Coating							
Total usage:							

Notes:

1. Annual usage. The tracking is on a 12-month basis beginning in January of each year. Enter either January or for a new operation, the month that the first press began running.
2. List brand name or supplier's identification number from MSDS.
3. Enter usage amount in pounds or gallons, depending on how the product is tracked (Example: ink in pounds, solvent in gallons, etc.). Usage equals beginning inventory, minus final inventory, plus purchases, minus credits for documented disposal or returns to suppliers.
4. Check MSDS or supplier data for VOC content. If product is 100% VOC, then OC content equals VOC content. Add "exempt VOCs" to VOC content to obtain OC content. For products tracked in pounds, enter OC content in "% by weight." For products tracked in gallons, enter OC content in "pound per gallon."
5. Check MSDS or supplier data for total HAP content of material. See list of Hazardous Air Pollutants included with this guide.
6. Check MSDS or supplier data for individual HAP content of material, e.g., 0.2 lbs/gal of xylene, 0.5 lbs/gal of methyl isobutyl ketone, etc.

Midsize Printing Facility – Annual Material Usage Tracking Sheet

(tracks annual material usage and organic compound/HAP content for permit-by-rule)

Company: _____ **Usage Period [1]:** _____ (month/year)
Date: _____
Prepared By: _____

Chemical Category	Press Chemical Product [2]	Usage Amount [3]		OC Content [4]		Total HAP Content [5]	Individual HAP Content [6]
		(lbs)	(gal)	(% wt.)	(lbs/gal)	(lbs/gal)	(lbs/gal)
Ink & Varnish							
Cleanup Solvent							
Fountain Solution Additives							
In-Line Coating							
Total usage:							
Total usage for previous 11-months:							
Rolling 12-month total:							

Notes:

1. Monthly usage. Include all usages during the calendar month.
2. List brand name or supplier's identification number from MSDS.
3. Enter usage amount in pounds or gallons, depending on how the product is tracked (Example: ink in pounds, solvent in gallons, etc.). Usage equals beginning inventory, minus final inventory, plus purchases, minus credits for documented disposal or returns to suppliers.
4. Check MSDS or supplier data for VOC content. If product is 100% VOC, then OC content equals VOC content. Add "exempt VOCs" to VOC content to obtain OC content. For products tracked in pounds, enter OC content in "% by weight." For products tracked in gallons, enter OC content in "pound per gallon."
5. Check MSDS or supplier data for total HAP content of material. See list of Hazardous Air Pollutants included with this guide.
6. Check MSDS or supplier data for individual HAP content of material, e.g., 0.2 lbs/gal of xylene, 0.5 lbs/gal of methyl isobutyl ketone, etc

Small Printing Facility – HAP Containing Material Tracking Sheet

(tracks annual usage of HAP-containing materials for permit-by-rule)

Company: _____ **Usage Period:** Beginning _____ (month/year)
Date: _____ Ending _____ (month/year)
Prepared By: _____

In the table below, list only those products that contain any hazardous air pollutants (HAP) and which HAPs they contain. If a product contains no HAPs, do not list it on this tracking form.

		Individual HAPs contained in products and product usage (gal.)[1] (use one column for each individual HAP)				
Chemical Product	**Usage Amount (gal.)**	Name of HAP in products:[2]	Name of HAP in products:	Name of HAP in products:	Name of HAP in products:	Name of HAP in products:
Total HAP-containing materials[3]	**(gal.)**					
Total usage of materials containing individual HAP[4]		(gal.)	(gal.)	(gal.)	(gal.)	(gal.)

Notes

1. Check MSDS of supplier data for individual HAP ingredients of material. See list of Hazardous Air Pollutants included with this guide. List one HAP per column, e.g., xylene, toluene, naphthalene, etc.

2. List one product per row and enter the same usage amount in each column corresponding to the product's HAP ingredients. (Example: Blanket Wash 145 is used 300 gal/yr and contains xylene and naphthalene. Enter 300 gal under "Usage Amount," 300 gal. under "Name of HAP in products: xylene" and 300 gal. under "Name of HAP in products: naphthalene."

3. Total HAP-containing material usage must be **2,667 gallons/yr** or less.

4. Total usage of materials containing the same HAP must be **1,333 gallons/yr** or less.

Midsize Printing Facility – HAP Containing Material Tracking Sheet

(tracks monthly and 12-month total usage of HAP-containing materials for permit-by-rule)

Company: _____ **Usage Period:** _____ (month/year)
Date: _____
Prepared By: _____

In the table below, list only those products that contain any hazardous air pollutants (HAP) and which HAPs they contain. If a product contains no HAPs, do not list it on this tracking form.

		Individual HAPs contained in products and product usage (gal.) [1] (use one column for each individual HAP)				
Chemical Product	**Usage Amount (gal.)**	Name of HAP in products: [2]	Name of HAP in products:	Name of HAP in products:	Name of HAP in products:	Name of HAP in products:
Total usage for month:						
Total usage for previous 11-months:						
Rolling 12-month total of HAP-containing materials [3]	gal.					
Total usage for month:						
Total usage from previous 11-months:						
Rolling 12-month total usageof materials containing individual HAP [4]		gal.	gal.	gal.	gal.	gal.

Notes

1. Check MSDS of supplier data for individual HAP ingredients of material. See list of Hazardous Air Pollutants included with this guide. List one HAP per column, e.g., xylene, toluene, naphthalene, etc.
2. List one product per row and enter the same usage amount in each column corresponding to the product's HAP ingredients. (Example: Blanket Wash 145 was used 30 gal/mo. and contains xylene and naphthalene. Enter 30 gal under "Usage Amount," 30 gal. under "Name of HAP in products: xylene" and 30 gal. under "Name of HAP in products: naphthalene."
3. Total HAP-containing material usage must be **3,333 gallons** or less per rolling, 12-month period.
4. Total usage of materials containing the same HAP must be **1,333 gallons** or less per rolling, 12-month period.

Example HAP-Containing Material Tracking Sheet for ABC Printing

This example shows how ABC Printing complies with the annual material usage thresholds for HAP-containing materials. This example also applies to screen, digital and flexographic operations. The HAP-containing materials used by ABC Printing in 2007 are:

Fountain Solution Additive, used 400 gal/yr and contains ethylene glycol.
Blanket Wash, used 500 gal/yr and contains xylene and naphthalene
Roller Wash, used 250 gal/yr and contains naphthalene
Cleaner 1000, used 200 gal/yr and contains naphthalene and ethyl benzene

Company: ABC Printing **Usage Period [1]:** Beginning Jan 2007 (month/year)
Date: 1-10-08 Ending Dec 2007 (month/year)
Prepared By: J. Smith

In the table below, list only those products that contain any hazardous air pollutants (HAP) and which HAPs they contain. If a product contains no HAPs, do not list it on this tracking form.

		Individual HAPs contained in products and product usage (gal.) [1] (use one column for each individual HAP)				
Chemical Product	**Usage Amount (gal.)**	Name of HAP in products: **ethylene glycol**	Name of HAP in products: **xylene**	Name of HAP in products: **naphthalene**	Name of HAP in products: **ethyl benzene**	Name of HAP in products:
FS additive	400	400				
Blanket wash	500		500	500		
Roller wash	250			250		
Cleaner 1000	200			200	200	
Total HAP-containing materials [3]	**1350 gal.**					
Total usage of materials containing individual HAP[4]		**400 gal.**	**500 gal.**	**950 gal.**	**200 gal.**	

Must **NOT** exceed **2,667 gallons**

The total for each column must **NOT** exceed **1,333 gallons**

Notes

1. Check MSDS of supplier data for individual HAP ingredients of material. See list of Hazardous Air Pollutants included with this guide. List one HAP per column, e.g., xylene, toluene, naphthalene, etc.

2. List one product per row and enter the same usage amount in each column corresponding to the product's HAP ingredients. (Example: Blanket Wash 145 is used 300 gal/yr and contains xylene and naphthalene. Enter 300 gal under "Usage Amount," 300 gal. under "Name of HAP in products: xylene" and 300 gal. under "Name of HAP in products: naphthalene."

3. Total HAP-containing usage must be 2,667 gallons/yr or less.

4. Total usage of materials containing the same HAP must be 1,333 gallons/yr or less.

Appendix E - Emission Calculation Guidance

VOC and HAP Emissions Calculation Worksheets

The following worksheets are provided to assist you in determining your VOC and HAP air pollution emissions. The worksheets are organized to make the assembly of the necessary information and data from purchasing/use records and Material Safety Data Sheets (MSDSs) as easy as possible.

Step 1: Assemble list of products currently used, purchase records, MSDSs, and other information such as VOC/HAP content test data.

Be sure to include
- Blanket wash/roller wash/press wash/type wash
- Parts cleaner (solvent)
- Inks
- Varnishes
- Coatings
- Cleaning solvents, including screen reclamation chemicals
- Adhesives
- Alcohol or alcohol substitutes (including fountain solution concentrate)
- Laminates

Any other VOC/HAP -containing products you use in excess of 25 gal/product/year, such as film cleaner.

Step 2: Complete worksheets for VOC and HAP emissions.

For the VOC Emissions Worksheet:

- Columns A, B, and C is general information that can be obtained from either purchase or use records, Material Safety Data Sheets (MSDSs) or your supplier. It may be necessary to contact the supplier for additional information.

- Column D is the result of multiplying Column B times Column C.

- The data for Column E is from the retention/emission factors from Appendix E, page 29 that are appropriate for specific type of printing process.

- Column F is the result of multiplying Column D by Column E.

- Column G is the result of dividing Column F by 2000, which is the number of pounds in a ton.

For the HAP Emissions Worksheet:

- Columns A, B, C, and D is general information that can be obtained from either purchase or use records, Material Safety Data Sheets (MSDSs) or your supplier. It may be necessary to contact the supplier for additional information.

- Column E is the result of multiplying Column C times Column D.

- The data for Column F is from the retention/emission factors from Appendix E, page 29 that are appropriate for specific type of printing process.

- Column G is the result of multiplying Column E by Column F.

- Column H is the result of dividing Column G by 2000, which is the number of pounds in a ton.

Appendix E - Emission Calculation Guidance

Emission Factors - Use The Following Emission Factors for Emission Calculations

Emission Factors For Sheetfed and Nonheatset Web Offset Lithographic Printing Operations

Ink	0.05*
Fountain Solution Concentrate	1
Fountain Solution Additive	1
Cleaning Solution	0.5**
Automatic Blanket Wash	1
Adhesives	1
Coatings:	
UV	1
Water-based	1
Conventional Varnish	0.05***

* *Conventional offset lithographic inks have a 95% VOC retention factor.*
** *Only if VOC composite vapor pressure of cleaning solution is 10 mm Hg or less at 20 °C. (68 °F.) and used shop towels kept in closed containers.*
*** *Conventional varnish is virtually identical to conventional offset lithographic inks.*

Emission Factors For Heatset Web Offset Lithographic Printing Operations Without Controls

Ink	0.8*
Fountain Solution Concentrate	1
Fountain Solution Additive	1
Cleaning Solution	0.5**
Automatic Blanket Wash	1
Adhesives	1
Coatings:	
UV	1
Water-based	1
Conventional Before Dryer	0.8*
Conventional After Dryer	0.05***

* *100% capture efficiency is assumed if airflow into dryer is demonstrated to be negative.*
** *Only if VOC composite vapor pressure of cleaning solution is 10 mm Hg or less at 20 °C. (68 °F.) and used shop towels kept in closed containers.*
*** *Conventional varnish is virtually identical to conventional offset lithographic inks.*

Emission Factors For Screen Printing Operations

Ink	1
Cleaning Solution	0.5*
Adhesives	1
Coatings:	
UV	1
Water-based	1
Solvent-based	1

* *Only if VOC composite vapor pressure of cleaning solution is 10 mm Hg or less at 20 °C. (68 °F.) and used shop towels kept in closed containers.*

Appendix E - Emission Calculation Guidance

Emission Factors For Digital Printing Operations

Ink	1
Cleaning Solution	0.5*
Adhesives	1
Coatings:	
UV	1
Water-based	1
Solvent-based	1

* *Only if VOC composite vapor pressure of cleaning solution is 10 mm Hg or less at 20 °C. (68 °F.) and used shop towels kept in closed containers.*

Emission Factors For Flexographic and Rotogravure Printing Operations Without Controls

Ink	1
Diluents	1*
Cleaning Solution	0.5**
Adhesives	1
Coatings:	
UV	1
Water-based	1
Solvent-based	1

* *Diluents includes ink, coating and adhesive dilution solvents.*

** *Only if VOC composite vapor pressure of cleaning solution is 10 mm Hg or less at 20 °C. (68 °F.) and used shop towels kept in closed containers.*

VOC AIR EMISSIONS

Col. A	Col. B		Col. C		Col. D		Col. E	Col. F				Col. G
Product Name Company (optional) Phone no. (optional)	Usage (Gal. or Lbs.)	X	VOC Content Lbs./Gal. or Lbs./Lb.	=	VOCs (Lbs.)	X	Emission Factor	**Total VOC Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total VOC Emissions (Tons Per Year)**
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
		X		=		X			÷	**2000**	=	
Total For All Products												

Appendix E - Emission Calculation Guidance

Col. A: Enter product name.

Col. B: Enter total amount used either per month or for the year, either in gallons or for inks, coatings, adhesives and other materials purchased by weight, enter pounds. To make the calculations easier, the purchase amount can be used. However, if the calculations indicate that you exceed a threshold, then it is advised to "sharpen your pencil" by determining the exact amount of material used. This is accomplished by adding the beginning inventory to the yearly purchase amount and subtracting the ending inventory and any waste shipped off-site.

Col. C: From Section III of the MSDS (Physical and Chemical Properties), enter value for "VOC content" in pounds per gallon. Ideally, the results should be based on a "Method 24" test. Do not include exempt VOCs such as Methylene Chloride, 1,1,1 Trichloroethane, Methyl Acetate, Acetone, or t-Butyl Acetate. For ink VOC content, you can determine the VOC emissions for each ink or use the highest VOC containing ink in each category (e.g., sheetfed, heatset, web, and nonheatset web).

If weight percent (%) of ingredients is given, these can be totaled and multiplied by the density of the material. The density can be determined by multiplying the specific gravity (found in Section III of the MSDS) by 8.33 lbs./gal. If no value is given and/or cannot be determined, contact your supplier and request the information.

Col. D: Multiply Column B by Column C to obtain value for VOCs in each product and write the answer in Column D.

Col. E: Multiply Column D by the emission factor in Column E and write the answer in Column F. Emissions factors are located at the beginning of Appendix E.

Col. G: Divide Column F by 2000 (lbs./ton) to convert to tons per year and write answer in Column G.

HAP AIR EMISSIONS

Col. A	Col. B	Col. C		Col. D		Col. E		Col. F	Col. G				Col. H
Product Name Company (optional) Phone no. (optional)	Name of HAP	Usage (Gal. or Lbs.)	X	HAP Content Lbs./Gal. or Lbs./Lb.	=	HAPs (Lbs.)	X	Emission Factor	**Total HAP Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total HAP Emissions (Tons Per Year)**
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
			X		=		X			÷	**2000**	=	
Total For All Products													

Appendix E - Emission Calculation Guidance

Col. A: Enter product name.

Col. B: If Section II of the MSDS (Hazardous Ingredients) includes any of the following EPA designated Hazardous Air Pollutants (HAPs), enter the name of the HAP. See attached list of common HAPs found in printing and all HAPs.

Cumene
Diethanolomine
Ethylbenzene
Ethylene glycol
Formaldehyde
n-Hexane
Hydrochloric acid
Isophorone
Methanol
Methyl Chloroform (1,1,1-trichloroethane)
Methyl ethyl ketone (MEK)
Methyl isobutyl ketone (MIBK)
Methylene chloride
Napthalene
Tetrachloroethene or Perchloroethylene
Toluene
1,1,2-Trichloroethane
Trichloroethylene (TCE)
Xylene (all isomers & mixtures)

HAP Compounds:
- Chromium compounds
- Glycol ethers*

* Includes mono & di-ethers of ethylene glycol, but excludes ethylene glycol monobutyl ether or 2-butoxyethanol or butyl cellusolve

Since the PBR thresholds are based on both individual HAPs and all HAPs combined, it would be best to group by each individual HAP. For example, group all products containing xylene, all containing toluene, all containing MIBK, etc.

Col. C: Enter total amount used either per month or for the year, either in gallons or for inks, coatings, adhesives and other materials purchased by weight, enter pounds. To make the calculations easier, the purchase amount can be used. However, if the calculations indicate that you exceed a threshold, then it is advised to "sharpen your pencil" by determining the exact amount of material used. This is accomplished by adding the beginning inventory to the yearly purchase amount and subtracting the ending inventory and any waste shipped off-site.

Col. D: From Section III of the MSDS (Physical and Chemical Properties), enter value for "HAP content" in pounds per gallon. Ideally, the results should be based on a "Method 24" or Method 311 test. Do not include 2-butoxyethanol (butyl cellusolve or ethylene glycol monobutyl ether) or methyl ethyl ketone. For ink HAP content, you can determine the HAP emissions for each ink or use the highest HAP containing ink in each category (e.g., sheetfed, heatset, web, and nonheatset web).

If weight percent (%) of ingredients is given, these can be totaled and multiplied by the density of the material. The density can be determined by multiplying the specific gravity (found in Section III of the MSDS) by 8.33 lbs./gal.

If no value is given and/or can not be determined, contact your supplier and request the information.

Col. E: Multiply Column C by Column D to obtain value for HAPs in each product and write the answer in Column E.

Col. F: Multiply Column E by the emission factor in Column F and write the answer in Column G. Emissions factors are located at the beginning of Appendix E.

Col. H: Divide Column G by 2000 (lbs./ton) to convert to tons per year and write answer in Column H.

Appendix E - Emission Calculation Guidance

EXAMPLE 1: VOC AIR EMISSIONS CALCULATIONS for Small Non-Heatset Lithographic Facility

A small four-press sheet-fed printing facility exceeded the 2,850 gallon usage threshold of cleaning solvents and fountain solution additives combined. Therefore, the company chose the alternative compliance method of calculating emissions to demonstrate compliance with the PBR. The calculation worksheet below summarizes the company's annual usage of VOC-containing materials and resulting emissions.

Col. A	Col. B		Col. C		Col. D		Col. E	Col. F				Col. G
Product Name Company (optional) Phone no. (optional)	Usage (Gal. or Lbs.)	X	VOC Content Lbs./Gal. or Lbs./Lb.	=	VOCs (Lbs.)	X	Emission Factor	**Total VOC Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total VOC Emissions (Tons Per Year)**
Aquos N17 fountain solution concentrate	400 gal	X	0.717 lbs/gal	=	287.0	X	1	287.0	÷	2000	=	0.14
Non-heatset Ink – process	25,200 lbs	X	35% wt.	=	8,820	X	0.05	441.0	÷	2000	=	0.22
Varn V120 Blanket Wash	2,400 gal	X	6.24 lbs/gal	=	14,976	X	0.50	7,488	÷	2000	=	3.74
X-tec Roller Wash	300 gal	X	5.90 lbs/gal	=	1,770	X	0.50	885.0	÷	2000	=	0.44
Total For All Products					**25,853**			**9,101**				**4.54**

EXAMPLE 2: VOC AIR EMISSIONS CALCULATIONS for Flexographic, Digital, or Screen Printing Facility

A small flexographic printing facility that uses both solvent-based and water-based inks exceeded the 20,000 pounds total material usage threshold for solvent-based printing. Therefore, the company chose the alternative compliance method of calculating emissions to demonstrate compliance with the PBR. The calculation worksheet below summarizes the company's annual usage of VOC-containing materials and resulting emissions. Note: Calculations for screen and digital printing facilities are similar.

Col. A	Col. B		Col. C		Col. D		Col. E	Col. F				Col. G
Product Name Company (optional) Phone no. (optional)	Usage (Gal. Or Lbs.)	X	VOC Content Lbs./Gal. Or Lbs./Lb.	=	VOCs (Lbs.)	X	Emission Factor	**Total VOC Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total VOC Emissions (Tons Per Year)**
Ink, solvent-based	1,200 gal	X	6.53 lbs/gal	=	7,836.0	X	1	7,836.0	÷	2000	=	3.92
Ink, water-based	650 gal	X	0.5 lbs/gal	=	325.0	X	1	325.0	÷	2000	=	0.16
Z-200 Press Wash	400 gal	X	6.25 lbs/gal	=	2,500.0	X	0.50	1,250.0	÷	2000	=	0.63
Coating, water-based	200 gal	X	0.38 lbs/gal	=	76.0	X	1	76.0	÷	2000	=	0.04
Total For All Products					**10,737.0**			**9,487.0**				**4.75**

EXAMPLE 3: VOC AIR EMISSIONS CALCULATIONS for Midsize Heatset Lithographic Facility

A midsize heatset printing facility exceeded the 50,000 lbs total materials usage threshold for heatset printing. Therefore, the company chose the alternative compliance method of calculating emissions to demonstrate compliance with the PBR. The calculation worksheet below summarizes the company's annual usage of VOC-containing materials and resulting emissions.

Col. A	Col. B		Col. C		Col. D		Col. E	Col. F				Col. G
Product Name Company (optional) Phone no. (optional)	Usage (Gal. or Lbs.)	X	VOC Content Lbs./Gal. or Lbs./Lb.	=	VOCs (Lbs.)	X	Emission Factor	**Total VOC Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total VOC Emissions (Tons Per Year)**
Heatset Ink – process	58,000 lbs	X	33% wt.	=	19,140.0	X	0.80	15,312.0	÷	2000	=	7.66
Aquos N17 fountain solution concentrate	600 gal	X	0.717 lbs/gal	=	430.0	X	1	430.0	÷	2000	=	0.22
Varn V120 Blanket Wash	1,500 gal	X	6.24 lbs/gal	=	9,360.0	X	0.50	4,680.0	÷	2000	=	2.34
X-tec Roller Wash	750 gal	X	5.90 lbs/gal	=	4,425.0	X	0.50	2,213.0	÷	2000	=	1.11
Total For All Products					**33,355**			**22,635**				**11.33**

EXAMPLE 4: Single HAP AIR EMISSIONS CALCULATIONS for materials at any facility

A small, four-press sheetfed printing facility exceeded the 1,333 gallon usage threshold of materials that contain a single HAP (naphthalene). Therefore, the company chose the alternative compliance method of calculating HAP emissions to demonstrate compliance with the PBR. The calculation worksheet below summarizes the company's annual usage of HAP-containing materials and resulting emissions. Calculations for screen, digital and flexographic facilities are similar.

Col. A	Col. B	Col. C		Col. D		Col. E		Col. F	Col. G				Col. H
Product Name Company (optional) Phone no. (optional)	Name of HAP, e.g., xylene, toluene	Usage (Gal. or Lbs.)	X	HAP Content Lbs./Gal. or Lbs./Lb.	=	HAPs (Lbs.)	X	Emission Factor	**Total HAP Emissions (Lbs Per Year)**	÷	2000 lbs. Per Ton	=	**Total HAP Emissions (Tons Per Year)**
Aquos N17 fountain solution concentrate:	ethylene glycol	400 gal	X	0.717 lbs/gal ethylene glycol	=	287.0	X	1	287.0	÷	2000	=	0.14
Varn V120 Blanket Wash:	xylene	1,200 gal	X	1.1 lbs/gal xylene	=	1,320.0	X	0.50	660.0	÷	2000	=	0.33
Varn V120 Blanket Wash:	napthalene	1,200 gal	X	2.3 lbs/gal napthalene	=	2,760.0	X	0.50	1,380.0	÷	2000	=	0.69
X-tec Roller Wash:	napthalene	300 gal	X	1.2 lbs/gal napthalene	=	360.0	X	0.50	180.0	÷	2000	=	0.09
Total HAP emissions									**5,357**				**2.67**
Total ethylene glycol emissions									287.0				**0.14**
Total xylene emissions									660.0				**0.33**
Total naphthalene emissions									1,560.0				**0.78**

Appendix F - Common Hazardous Air Pollutants in Graphic ArtsMaterials

Hazardous Air Pollutant (HAP)	Where Found	CAS #
Ammonia	Water-Based Inks and Coatings	7664-41-7
Barium	Some Red Pigments	7440-39-3
Benzene (Including Benzene In Gasoline)	Trace Contaminant In Some Cleaning Solvents Namely, Aromatic Hydrocarbon Blends	71-43-2
n-Butyl alcohol	Flexo/Gravure Ink Solvent	71-36-3
Cadmium & Compounds	Some Orange, Red, and Yellow Pigments	7440-43-9
Chromium (hexavalent) & Compounds	Film Cleaners, Some Fountain Solutions, Gravure Cylinder Preparation and Some Brown, Orange, and Red Pigments	7440-47-3
Cobalt & Compounds	Sheetfed Offset Ink Catalyst For Drying	7440-48-4
Copper & Compounds	Some Blue and Green Pigments and Component In Some Water-Based Coatings	7440-50-8
Cumene	Component In Some Cleaning Solvents Containing Aromatic Hydrocarbon Blends	98-82-8
Cyclohexane	Component In Some Cleaning Solvents Component In Spray Adhesive	110-82-7
Dibutyl Phthalate	Plasticizer In Some Inks and Coatings	84-74-2
Diethanolamine	Film Developer	111-42-2
Diethylene glycol dimethyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	111-96-6
Diethylene glycol butyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	112-34-5
Diethylene glycol ethyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	111-90-0
Diethylene gycol methyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	111-77-3
Ethyl benzene	Component In Some Cleaning Solvents Containing Aromatic Hydrocarbon Blends Flexo/Gravure Water & Solvent-Based Inks	100-41-4
Ethylene glycol dimethyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	110-71-4
Ethylene glycol ethyl ether acetate	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	110-80-5
Ethylene glycol methyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute	109-86-4
Ethylene glycol propyl ether	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute Some Water-Based Coatings	2807-30-9
Ethylene glycol	Fountain Solution Additive - IPA Substitute Component In Copper Plating Solution Flexo/Gravure Water & Solvent-Based Inks	107-21-1
Formaldehyde	Some Film Developing Chemistry	50-00-0
Glycol Ethers & Their Acetates	Component In Some Cleaning Solvents Fountain Solution Additive – IPA Substitute Flexo/Gravure Water & Solvent-Based Inks Litho Plate Developers Component In Glass Cleaner	xx-xx-x
Hexane	Component In Some Cleaning Solvents Component In Film Cleaner Component In Spray Adhesive Flexo/Gravure Solvent-Based Inks	110-54-3

Appendix F - Common Hazardous Air Pollutants in Graphic ArtsMaterials

Hazardous Air Pollutant (HAP)	Where Found	CAS #
Hydrochloric acid	Muratic Acid – Maintenance Area Component In Copper Plating Solution	7647-01-0
Hydroquinone	Film Developing Chemistry	123-31-9
Isophrone	Screen Printing Ink Solvent	78-59-1
Lead Chromate	Some Yellow Pigments	7758-97-6
Manganese & Compounds	Sheetfed Offset Ink Catalyst For Drying Some Red and White Pigments	7439-96-5
Methanol	Component In Some Cleaning Solvents Ink Jet Ink Solvent Component In Stay Open-Ink Drying Retardant Component In Compressed Propane Solvent In Some Adhesives Flexo/Gravure Solvent-Based Inks	67-56-1
Methyl Chloroform - 1,1,1-Trichloroethane	Component In Stay Open-Ink Drying Retardant Solvent In Some Adhesives Component In Some Cleaning Solvents Component In Various Maintenance Products	71-55-6
Methyl isobutyl ketone	Component In Some Cleaning Solvents	108-10-1
Methylene chloride	Component In Some Cleaning Solvents Copper Plating Solution Component In Blanket Fix Component In Film Cleaner	75-09-2
Naphthalene	Component In Some Cleaning Solvents Containing Aromatic Hydrocarbon Blends	91-20-3
Nitric Acid	Component In Some Cleaners	7697-37-2
Phosphoric Acid	Component In Fountain Solution Concentrate Component In Some Cleaning Solutions	7664-38-2
Perchloroethylene	Component In Film Cleaner Component In Some Lubricants Some Flexo Plate Developers	127-18-4
Propylene Oxide	Component In Some Inks	75-56-9
Phenol	Some Film & Plate Developing Chemistry	108-95-2
Sulfuric Acid	Battery Acid	7664-93-9
Toluene	Component In Some Cleaning Solvents Publication Rotogravure Ink Solvent	108-88-3
Toluene diisocyanates	Flexo/Gravure Water & Solvent-Based Inks	26471-62-5
Vinyl Acetate	Component In Some Adhesives	108-05-4
Xylenes (isomers & mixture)	Component In Some Cleaning Solvents Component In Stay Open-Ink Drying Retardant Flexo/Gravure Ink Solvent	1330-20-7
Zinc & Compounds	Component In Water-Based Coatings Component In Some Lubricants Some White Pigments	7646-85-7

Appendix G - List of Hazardous Air Pollutants (HAP)

HAPs from Section 112 (b) of The Clean Air Act

CAS Number	Pollutant
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including Benzene from gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
133062	Captan
63252	Carbaryl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene (2-chloro-1,3-butadiene)
1319773	Cresols/Cresylic acid (isomers and mixture)
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene (Isopropylbenzene)
94757	2,4-D, salts,esters (Dichlorophenoxyacetic acid)
72559	DDE (p,p-Dichlorodiphenyldichloroethylene)
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane

Appendix G - List of Hazardous Air Pollutants (HAP)

CAS Number	Pollutant
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene
91941	3,3-Dichlorobenzidine
111444	Dichloroethyl ether (Bis(2 chloroethyl)ether)
542756	1,3-Dichloropropene (mixture)
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Dimethylaniline
64675	Diethyl sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl aminoazobenzene
119937	3,3-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	1,1-Dimethyl hydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol, and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (1-chloro-2,3-epoxypropane)
106887	1,2-Epoxybutane (1,2-Butylene oxide)
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (1,2-Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Aziridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene 1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (gamma hexachlorocyclohexane) (all isomers)
108316	Maleic anhydride

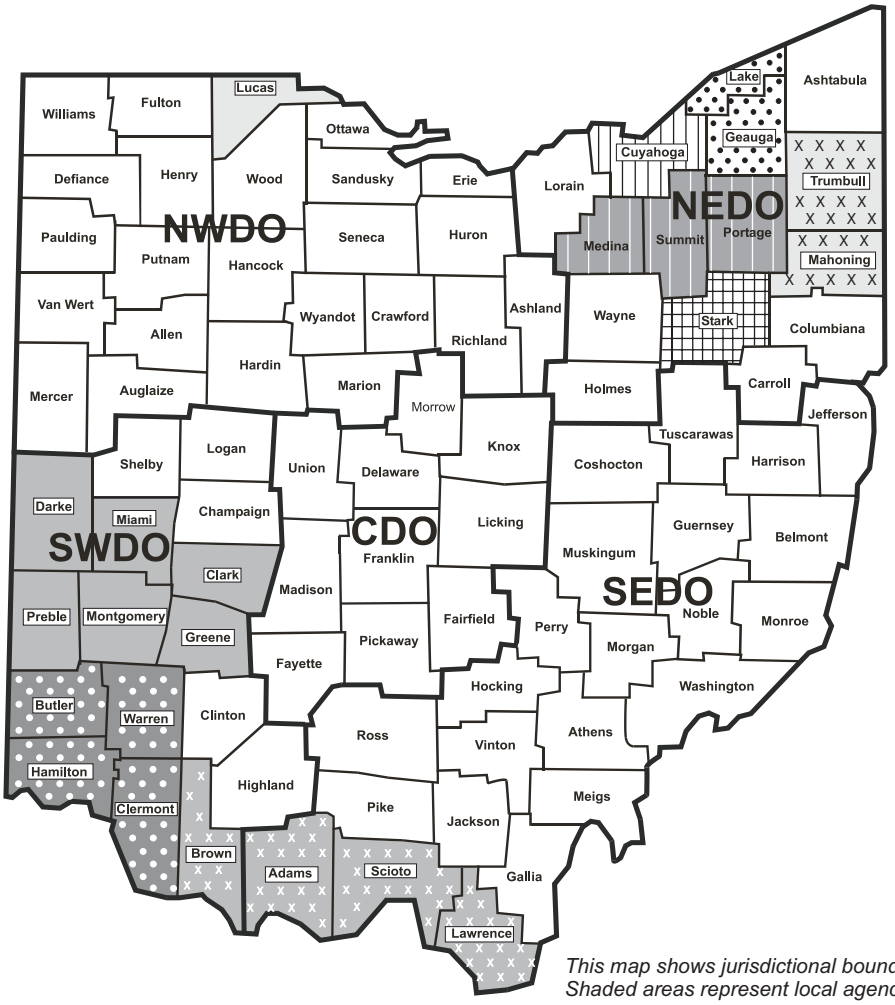
Appendix G - List of Hazardous Air Pollutants (HAP)

CAS Number	Pollutant
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (4-methyl-2-pentanone) (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	4,4-Methylene-bis(2-chloroaniline)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocyanate (MDI)
101779	4,4-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (PCB's) (Aroclors)
1120714	1,3-Propane sultone
57578	beta Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2-Dichloropropane)
75569	Propylene oxide
75558	1,2-Propylenimine (2-Methyl aziridine)
91225	Quinoline
106514	Quinone (1,4-benzoquinone)
100425	Styrene
96093	Styrene oxide
1746016	2,3,7,8-Tetrachlorodibenzo p dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium tetrachloride
108883	Toluene
95807	2,4-Toluene diamine
584849	2,4-Toluene diisocyanate

Appendix G - List of Hazardous Air Pollutants (HAP)

CAS Number	Pollutant
95534	o-Toluidine
8001352	Toxaphene (chlorinated camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl acetate
593602	Vinyl bromide (bromoethene)
75014	Vinyl chloride
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (isomers and mixture)
95476	o-Xylenes
108383	m-Xylenes
106423	p-Xylenes
0	Antimony Compounds
0	Arsenic Compounds (inorganic including arsine)
0	Beryllium Compounds
0	Cadmium Compounds
0	Chromium Compounds
0	Cobalt Compounds
0	Coke Oven Emissions
0	Cyanide Compounds
0	Glycol ethers
0	Lead Compounds
0	Manganese Compounds
0	Mercury Compounds
0	Fine mineral fibers
0	Nickel Compounds
0	Polycylic Organic Matter
0	Radionuclides (including radon)
0	Selenium Compounds

Ohio EPA District Offices and Local Air Pollution Control Agencies



This map shows jurisdictional boundaries.
Shaded areas represent local agencies within Ohio EPA districts.

District Offices

CDO Central District Office
50 West Town Street, Suite 700
Columbus, OH 43215
(614) 728-3778 FAX (614) 728-3898

SEDO Southeast District Office
2195 Front St.
Logan, OH 43138
(740) 385-8501 FAX (740) 385-6490

NEDO Northeast District Office
2110 E. Aurora Rd.
Twinsburg, OH 44087
(330) 963-1200 FAX (330) 487-0769

NWDO Northwest District Office
347 North Dunbridge Rd.
Bowling Green, OH 43402
(419) 352-8461 FAX (419) 352-8468

SWDO Southwest District Office
401 E. Fifth St.
Dayton, OH 45402-2911
(937) 285-6357 FAX (937) 285-6249

Local Air Pollution Control Agencies

Akron Regional Air Quality Management District
146 South High St, Room 904
Akron, Ohio 44308
(330) 375-2480 FAX (330) 375-2402

Air Pollution Control Division Canton City Health Dept.
420 Market Ave. North
Canton, Ohio 44702-1544
(330) 489-3385 FAX (330) 489-3335

Dept. of Environmental Services Air Quality Programs
250 William Howard Taft Road
Cincinnati, Ohio 45219-2660
(513) 946-7777 FAX (513) 946-7778

Cleveland Dept. of Public Health Division of Air Quality
75 Erieview Plaza
Second Floor
Cleveland, Ohio 44114
(216) 664-2297 FAX (216) 420-8047

Regional Air Pollution Control Agency Montgomery County Health Dept.
117 South Main St.
Dayton, Ohio 45422-1280
(937) 225-4435 FAX (937) 225-3486

Lake County General Health District Air Pollution Control *
33 Mill Street
Painesville, Ohio 44077
(440) 350-2543 FAX (440) 350-2548

Portsmouth Local Air Agency
605 Washington St., Third Floor
Portsmouth, Ohio 45662
(740) 353-5156 FAX (740) 353-3638

City of Toledo Division of Environmental Services
348 South Erie Street
Toledo, Ohio 43604
(419) 936-3015 FAX (419) 936-3959

Mahoning-Trumbull APC Agency *
345 Oak Hill Ave., Suite 200
Youngstown, Ohio 44502
(330) 743-3333 FAX (330) 744-1928

**Facilities located within these jurisdictions should file air permit applications with Ohio EPA's Northeast District Office (NEDO).*

This guide was produced by:

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