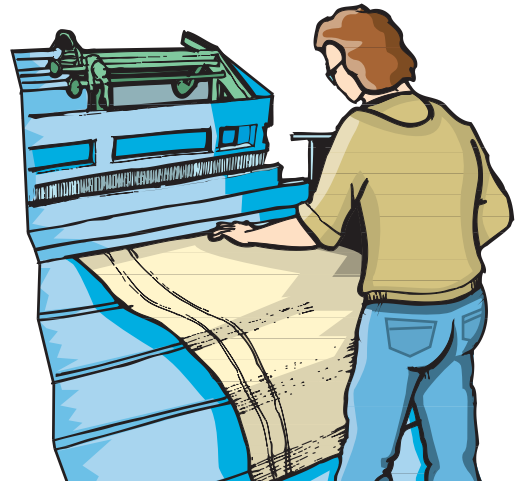


# AIR

## TITLE V COMMERCIAL PRINTING FACILITIES



### What is Title V?

Title V of the Federal Clean Air Act Amendments of 1990 (CAAA) required development of permit programs that would require major sources of air emissions throughout the U.S. to obtain an operating permit. These operating permits are referred to as “Title V permits,” or “Part 70 permits” since EPA issued rules for State Title V Programs under 40 CFR, Part 70. The Department of Environmental Quality (DEQ) has obtained authority and approval from EPA to administer the program for Oklahoma, effective March 6, 1996. Oklahoma received approval to implement a 3-year phased application submittal schedule, with all permits to be issued within five years. Although Oklahoma has required an operating permit for both major and minor sources for a number of years, Title V requires all existing major facilities to submit an application for a new Title V operating permit during this three-year phase-in. *A separate DEQ Title V Program Factsheet is available, which gives more details on the program.*

### Am I a Title V Source?

In general, a Part 70 permit is required of those facilities with the Potential to Emit (PTE) 100 TPY or more of any criteria pollutant (NO<sub>x</sub>, CO, SO<sub>2</sub>, Ozone, VOCs, PM<sub>10</sub>, and Lead), or 10 TPY or more of any one Hazardous Air Pollutant (HAP), or 25 TPY or more of any combination of HAPs. If prior to the facility’s Title V application submittal deadline a facility has applied for a minor permit which would limit emissions below the threshold levels mentioned above (i.e., by requiring operational constraints and/or control equipment), a Part 70 permit would not be required. Otherwise, PTE is calculated as if no air pollution control equipment is



in place and all operations are continuous. Facilities in the Printing and Publishing industry have the PTE several criteria pollutants and HAPs. An emissions inventory should be performed at your facility to determine if you exceed any of the Title V thresholds. [Please see the DEQ Factsheet on PTE for the general process in calculating PTE.](#)

Because of the nature of the printing process, VOCs are the primary pollutants emitted by commercial printing facilities.



Several sources contribute to emissions of VOCs. These include developers and photographic processing solutions used in the imaging press; inks, cleaning solutions, and heaters (ovens) used in the printing process; and adhesives used in the finishing process. Other emissions sources could include rags used for cleaning, used rinse water, empty chemical storage containers, and spent developer/fixer, depending on the particular process used at a facility. Of particular concern are any HAPs which may be present in the VOCs at a facility, since emissions of HAPs at relatively low levels (> 10 TPY) subject the facility to a Part 70 permit. Because of the multitude of various solvents, inks, adhesives, and other chemicals used at commercial printers individual constituents (HAPs) must be identified on a case-by-case basis.

### However, some of the more common include:

- |                      |                         |
|----------------------|-------------------------|
| toluene*             | methyl isobutyl ketone* |
| trichloroethane*     | Naphthalene*            |
| methyl ethyl ketone* | xylene*                 |
| thylbenzene*         | methanol*               |
| ethylene glycol*     | glycol ethers           |
| Freon 113            | phenol*                 |

\*(HAP)

# AIR Title V Commercial Printing Facilities



Certain other sources, i.e., any affected source subject to the Acid Rain Rules, and any solid waste incinerator subject to Section 129(e) of the CAA, are required to obtain a Part 70 permit regardless of their PTE. In addition, sources subject to a New Source Performance Standard (NSPS) or a National Emissions Standard for a Hazardous Air Pollutant (NESHAP), may be specifically required by the NSPS or NESHAP to obtain a Part 70 permit. Note that at this

time, NSPS require that only two types of sources be subject to Title V permitting—Municipal Waste Combustors, and Municipal Solid Waste Landfills. No Printing and Publishing facilities are currently required to obtain a Part 70 permit specifically because of an NSPS.

Several NESHAPs may be applicable now to operations at Printing and Publishing facilities. In addition, several NESHAPs are scheduled for promulgation in the near future which may also be applicable to these operations. Those NESHAPs currently effective include:

Source Category	Adopted by State Rule	40 CFR 61 Subpart
General Provisions	6/06/84	Subpart A

Source Category	Promulgation Date	40 CFR 63 Subpart
Printing & Publishing	5/30/96	Subpart KK
Degrease Organic Cleaners*	12/02/94	Subpart T
Off-site Waste Treatment	7/01/96	Subpart DD
Industrial Cooling Towers**	9/08/94	Subpart Q

\* Applies to major sources as well as area sources. However, applicability to area sources has been deferred until December 9, 1999. Title V applications for deferred area sources are due by December 9, 2000.

\*\* Applies to those cooling towers using chromium compounds.

Those NESHAPs scheduled for promulgation in the future that may potentially affect operations at Printing and Publishing facilities include:

Source Category	Statutory Date
Printing, Coatings & Dyeing of Fabrics	11/15/00
Paper & Other Webs (Surface Coating)	11/15/00

Note that most NESHAPs apply only to major sources. However, there are some that apply to area (minor) sources as well as major sources. In particular, the Halogenated Solvent Cleaning NESHAP applies to both major and minor sources. However, this NESHAP has been deferred until December 9, 1999, with Title V applications due by December 9, 2000. The Halogenated Solvent Cleaning NESHAP applies to certain solvent cleaning sources using methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform

at both major and minor source facilities. Use of a solvent cleaner subject to this NESHAP could require a Part 70 permit for the entire facility, even if it is a minor source (See the specific NESHAP for more details). Note that NESHAPs require an initial notification of NESHAP status. In lieu of this notification, a facility may submit an application for a Part 70 permit. Depending on the notification date, and your Title V submittal date, you may want to submit a Title V application in lieu of the NESHAP notification.

*Continued on next page*

## NSPS Subparts of Concer & Effective Dates

Subpart QQ: Graphic Arts Industry: Publication Rotogravure Printing (after October 28, 1980)

## State Rules of Concern

Subchapter 7:	New Source Permits (effective date: October 1972)
Subchapter 8:	Part 70 Permits (effective date: March 6, 1996)
Subchapter 9:	Excess Emissions Reporting (affects both new and existing)
Subchapter 19:	Particulate Matter Emissions from Fuel-burning Equipment (affects both new and existing)
Subchapter 25:	Smoke, Visible Emissions, and Particulates (affects both new and existing)
Subchapter 27:	Particulate Matter Emissions from Industrial and Other Processes and Operations
Subchapter 31:	Sulfur Compounds (affects both new and existing)
Subchapter 33:	Nitrogen Oxides (effective date: October 1971)
Subchapter 35:	Carbon Monoxide
Subchapter 37:	Organic Materials (affects both new and existing)
Subchapter 39:	Organic Materials (affects both new and existing units in Tulsa and Oklahoma Counties)
Subchapter 41:	Hazardous and Toxic Air Contaminants (affects both new and existing)

## What Permitting Options Are Available?

If you are a true minor source, i.e., your PTE is less than Title V thresholds, under DEQ jurisdiction you are still required to have a DEQ-issued minor-source operating permit if emissions of any criteria pollutant exceed 1 lb/hr, or if emissions of any toxic air pollutant exceed the de minimis level given in DEQ rules (OAC 252:100-41-43). If your PTE exceeds Title V thresholds, but you are able to limit emissions to below those thresholds you may be eligible for a “**synthetic minor**” permit. In general, permit limitations on PTE in a synthetic minor permit must be federally enforceable. See the *DEQ Factsheet on PTE for more details*. If you cannot, or chose not to limit your PTE to below Title V



thresholds, then you are required to apply for a Part 70 permit by the submittal schedule deadline for your particular type of facility.



## Where Do I Apply For a Permit?

Contact our office and we will send you the appropriate forms. If you are unsure as to whether you need a permit you should request an Applicability Determination (AD). An AD is used to determine whether a particular source or operation is subject to the requirements of a rule. The AD fee is \$100 and, generally, must contain the same information as a regular permit application. In addition, you may contact the Customer Assistance Program or Air Quality Division and request a pre-application submittal conference. Staff will meet with you to identify any areas needing further work. The easiest way to expedite issuance of your Part 70 permit is to ensure that the application is administratively and technically complete. Requests for forms may be sent to:

DEQ – Air Quality Division  
707 N. Robinson, Suite 4100  
P.O. Box 1677  
Oklahoma City, OK 73101-1677

DEQ – Customer Assistance Program  
1000 N. E. 10th Street  
Oklahoma City, OK 73117-1212

# AIR Title V Commercial Printing Facilities

## When Are Title V Applications Due?

DEQ has received approval to implement a three year phased submittal schedule with all permits to be issued after five years. The effective date for this schedule is March 6, 1996. Title V applications for commercial printing facilities with SIC Codes of 2752 and 2761 are due March 5, 1997. Applications for all remaining commercial printing sources are due by March 5, 1999.

## Who Can I Contact For More Information?

For general assistance contact our Customer Service Division, toll free, at 1-800-869-1400, or for specific assistance contact the Air Quality Division at (405) 702-4100.

# How To Calculate Your VOCs

## Conversion chart of pounds/gallons/tons

- 1 gallon = 6-8 pounds (depends on product's specific gravity)
- 275 gallons = 5 drums x 55 gallons (about 1 ton)
- 3,000 gallons = approx. 10 tons (depends on specific gravity)
- 2,000 pounds = 1 ton



## Step 1: Gather your Material Safety Data Sheets (MSDS) for:

- Blanket wash / roller wash / press wash / type wash / etc.
- Parts cleaner (solvent)
- Inks
- Alcohol or alcohol substitutes (including fountain solution concentrate)
- Proofing system solutions (if alcohol or solvent based)
- Any other VOC-containing formulations you use



## Step 2: Complete the following for each product:

(Sec. 2 or 3 of the MSDS for VOC content)

- Product name \_\_\_\_\_ Mfr/vendor \_\_\_\_\_
- Monthly Use \_\_\_\_\_ gallons (gals) or pounds (lbs)
- VOC Content \_\_\_\_\_

Step 2 continued on page 5

## Step 2: Continued...

If VOC content of product is given in weight % VOC, then:

- (total VOC % divided by 100) x lbs per month of product = lbs of total VOCs per month.

If VOC content is given in lbs VOC per gal of product, convert as follows and use the result in the above formulas:

- For calculating VOC in inks: [lbs total VOC per gal of product] divided by [lbs per gal of product (density of product)] = lbs total VOC per lb of product = [total weight % VOC divided by 100],
- For press cleaning materials (sold by the gallon): [lbs total VOC per gal of product] x gals per month of product = lbs total VOCs/month

If VOC content is given in volume % VOC, contact your supplier or manufacturer to obtain weight % VOC.

- "Specific gravity" may be listed instead of lbs/gal. If so, listed specific gravity x 8.34 (density of water in lbs/gal) = density of product in lbs/gal.



## NOTE

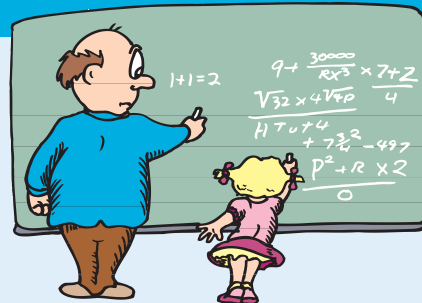
In some cases it may be appropriate to use a retention factor (typically 95% ) for nonheatset sheetfed inks. In these cases, multiply the VOC for ink in lbs/mo by 0.05 to obtain VOC in lbs/mo.

## Step 3: Add VOC lbs/mo used for all products to obtain facility usage per month.

\_\_\_\_\_ Total (VOC in lbs/mo)

## Step 4: Calculate actual emissions/yr:

- Add monthly total VOC emissions for each month in operation lbs/yr
- Lbs per year divided by 2000 = Actual Emissions (tons per year)



# Sample Calculations



Most printing facilities calculate emissions using a mass balance method from an inventory of all chemicals purchased by the plant over a year. It is usually assumed that all chemicals purchased in that year were used in that year. A careful inspection of your inventory and associated MSD sheets will simplify the process. The following example is taken from a recently issued permit for a lithographic printing facility.

### Equation

For a lithographic printing process the emission of uncontrolled VOCs (PTE) can be calculated using the following equation;

$$\text{Product* Usage Rate} \times \text{VOC content} \times \text{hrs/year} \times \text{tons/2000 lbs} = \text{Tons Per Year}$$

(\*ink, adhesive, solvent, etc.)

### Example

$$3.00 \frac{\text{Gal}}{\text{hr}} \times 7.98 \frac{\text{Lbs of VOC}}{\text{Gal.}} \times 8760 \frac{\text{hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ Lb}} = 105.00 \frac{\text{tons VOC}}{\text{year}}$$

### Emission Estimates

Using the chemical usage inventory for the facility, and MSD sheets to identify those products containing VOCs, the following estimates of emissions can be prepared.

Product Name	Usage Rate	VOC	VOC (PTE) Emissions	
	lb/yr	Content	Lb/hr	TPY
Soy Inks	755700	20 wt.%	17.3	75.6
Howson Fountain Solution	124480	0.7 lb/gal	9.9	43.6
Grafikleen	140000	90 wt. %	14.4	63.0
Ducare Recycled Fixer	30450	0.3 lb/gal	1.0	4.6
Ducare Recycled Developer	19580	0.00	0.0	0.0
Marathon Super Developer	11040	7.98 lb/gal	10.1	44.0
Total VOC Emissions			52.7	230.88

# Title V Commercial Printing Facilities

The PTE calculations show that this facility (on last page) has the potential to emit more than 100 TPY of VOCs, and thus would be subject to Title V. In addition, some of the products contain HAPs and other toxics.

Individual components of the products can be identified from the MSD sheets, along with their contribution to the whole. Computation of the total amount used and comparison to

the HAP list will enable applicants to determine what products (if any) are responsible for making them a Title V source because of a HAP. The following table (next page) lists the toxicity classification, Maximum Acceptable Ambient Concentration (MAAC) standards, and proposed emission limits for a number of compounds found in the products listed above. (This is an abbreviated list)

Pollutant	CAS	Toxicity	MAAC	De Minimis Levels		Potential Emissions	
	Number	Category	ug/m3	lb/hr	TPY	lb/hr	TPY
Isopropanol	67630	C	98339	5.6	6.0	0.7	3.3
<b>Sodium Nitrate**</b>	7631994	C	NE	5.6	6.0	0.7	<b>3.3</b>
d-Limonene	6989275	C	NE	5.6	6.0	12.1	53.2
Acetic Acid	64197	C	2456	5.6	6.0	0.1	0.4
Sodium Bisulfite	7631905	C	50	5.6	6.0	0.1	0.4
Sodium Sulfite	7757837	A	NE	0.57	0.6	0.07	0.3
Stoddard Solvent	8052413	C	35000	5.6	6.0	13.5	59.1
<b>Phosphoric Acid**</b>	7664382	C	100	5.6	6.0	0.04	<b>0.2</b>
Gamma Butyro-lactone	96480	C	NE	5.6	6.0	11.4	50.0

\*\* Listed HAP in Title III of 1990 CAAA NE = Not Established

The only HAPs emitted are Sodium Nitrate and Phosphoric Acid. Neither, by itself, is emitted at a level exceeding 10 TPY. In addition, the total emission of all HAPs does not exceed 25 TPY. Thus, this facility would not be required to obtain a Part 70 permit specifically because of HAPs.

If this facility wanted to avoid obtaining a Part 70 permit it could possibly limit its PTE by installation of control equipment, substitution of products (with lower VOC content), or limiting hours of operation. However, note that total

VOC emissions would have to be reduced (to less than 100 TPY) and HAP emissions would have to be reduced so that no single HAP would exceed 10 TPY, and the combination of all HAPs would not exceed 25 TPY. Thus a synthetic minor permit could be obtained for the facility. However, note that application for a synthetic minor permit must be made prior to the Title V submittal deadline. Otherwise, the facility must obtain a Part 70 permit even if emissions are limited to less than 100 TPY (or 10/25 TPY for HAPs).

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