Ohio EPA

Division of Air Pollution Control

Engineering Section

Engineering Guide #68

Question:

How is the organic compound (OC) potential to emit (PTE) to be calculated for a non-heatset or sheet-fed printing press for the purpose of determining if the press is exempt from permitting requirements by OAC Rule 3745-31-03(A)(1)(s)?

In order to answer the above question, the following questions first need to be addressed:

(1) What are the materials employed in this type of printing press which contain organic compounds that may be emitted into the ambient air?

(2) How do you determine the maximum operating capacity/rate for a printing press to use in PTE calculations?

(3) How are the OC emissions from non-heatset or sheet-fed press materials calculated?

(4) How are emission “credits” to be documented for a company which disposes of or recycles waste solvents/inks?

(5) How is the OC content of press materials to be determined?

Some of these questions surfaced through discussions with the Printing Industry of Ohio (PIO). The other questions have been added by the DAPC for purposes of clarification.

Answers:

(1) The materials employed in a non-heatset or sheet-fed press, which contain organic compounds that may be emitted into the ambient air, consist of printing ink, fountain solution (lithographic process only), varnish, clear coating, and cleanup solvent. Cleanup solvents are typically known as “blanket wash,” “roller wash,” “type wash,” “plate wash,”

or simply as “cleaners”. Several different types of cleanup solvents are typically used on the same press. Fountain solution is a mixture of water and isopropyl alcohol or VOC-containing alcohol substitutes. The concentration of alcohol in the fountain solution can range from 0 to 35 percent alcohol (by volume), with most presses falling in the 15 to 20 percent range. Alcohol substitutes contain OC’s but are used in much smaller quantities (typically less than 5 percent by weight) than alcohol. Lithographic non-heatset inks have low vapor pressures and contain below 35 percent OC (and only a small percentage (5%) is actually emitted). (See discussion of inks in Answer #3 below). Flexographic, letterpress, rotogravure, and screen printing inks may contain more OC.

(2) Determining the “maximum operating rate” of a printing press is not a straightforward process. In lithography, the amount of ink and the OC content of the fountain solution can vary greatly from job to job. The ratio of the inked areas to the total impression area of the substrate is known as “percent coverage.” Theoretically, black ink applied at 100 percent coverage would represent maximum black ink usage. However, this would completely cover the substrate and produce a product, i.e., black paper, which is not salable. Additional printing units on multi-color presses set at 100 percent coverage would only exacerbate this problem and would result in ink that was too thick to dry. The percent ink coverage, in turn, affects the fountain solution OC content and consumption. Therefore, basing the maximum operating rate on maximum possible ink coverage in order to calculate maximum emissions is impractical.

The Printing Industry of Ohio (PIO) has formulated a method to calculate PTE for a press which is based on inherent press capacity limitations and historical material usage data. This method is addressed in Answer #4 and is an acceptable way to calculate PTE for these types of presses.

(3) **Inks**

Lithographic sheet-fed and non-heatset inks contribute a relatively small amount of OC to the facility emissions. This is because most of these inks dry by oxidation or absorption, not evaporation as heatset inks do. These inks also contain high molecular weight petroleum or soybean

derived oils which have very low vapor pressures.

For emission calculations, assume 95% by weight of the ink oil (solvent) is retained in the substrate and 5% is emitted. Recent analyses of printed materials have shown no measurable loss of retained ink oil occurred within 20 hours after printing. This is due largely to the printed product being tightly stacked, boxed, or wrapped soon after printing.

Fountain Solutions

Assume all (100%) of the OC (as alcohol or as alcohol substitutes) in fountain solution is emitted.

Clean up Materials

The 1993 CTG and 1994 ACT documents both recognize that cleaning operations commonly involve hand wiping the press components with solvent moistened shop towels. After use, these shop towels are then collected in covered containers and shipped to a commercial laundry or disposal facility. For cleanup solvents which have a composite vapor pressure less than 10 millimeters of mercury at 20 degrees Celsius, assume 50 percent of the solvent is retained in the shop towel and 50 percent is emitted. This emission reduction can only be claimed if the solvent meets the vapor pressure criteria and the used shop towels are stored in closed containers. A Material Safety Data Sheet (MSDS) is normally sufficient to document a cleanup solvent's vapor pressure. Assume no credit or reduction for cleanup solvents having vapor pressures greater than 10 mm Hg unless site specific testing has been done.

(4) A company may claim "credits" for materials recycled or disposed through proper manifest records for waste shipped off-site. An analysis may need to be performed (if the generator is unable to use their knowledge of the waste to determine if it is hazardous) on a sample of the waste to properly classify it according to hazardous waste regulations. These analyses will typically determine the percentage of volatile components in the waste. Records such as an MSDS or analyses should be kept at the facility to document any material disposal "credit" intended to be claimed.

(5) Determining the OC content of cleanup materials and fountain solutions is relatively straightforward. Cleanup solvents are typically all OC and the material density can be assumed to equal the OC content. There has been increased use of low VOC and water-based emulsion cleaners in place of traditional solvents.

Fountain solution OC content is best obtained by calculation using formulation data and the OC content of each component. [Note: "Alcohol-free" fountain solutions typically consist of an OC-containing concentrate added in small quantities to water (approximately 4 ounces per gallon of water).] Consequently, the OC content of non-alcohol fountain solutions as applied is very low.

The OC content of inks is often not readily available from product MSDS and may require contacting the ink manufacturer for the proper information. The use of Method 24 to determine ink OC content may yield inaccurate results due to the high boiling, high molecular weight compounds found in these printing inks. For this reason, formulation data should be used to determine the ink OC content.

Considering the above questions, the Printing Industry of Ohio (PIO) has developed a manual entitled "ENVIROPRINT" which contains a method to calculate the PTE based on material inventory and per-press chemical allocation factors. ***This method is especially useful: 1) for determining if existing presses require permits; 2) when no per-press usage data is available; or 3) for evaluating material usage rates and PTI requirements for new presses.*** The PIO's ENVIROPRINT method first calculates the actual total OC emissions from the facility using the solvent retention and cleanup solvent reduction factors and then allocates a portion to each press using an "allocation factor". Facilities that maintain per-press material usage data could calculate per-press emissions and would not need to calculate press "allocation factor(s)".

For each OC containing material, a "Product per Press Allocation Factor" is calculated which represents the percentage of that material allocated to each press. The allocation factor accounts for the physical limitations inherent in each press, i.e., press speed, impression area, number of print units, etc. Multiplying the annual VOC emissions from each material by the press allocation factors and summing gives the per-press actual emissions. The PTE is then calculated by multiplying the actual emissions by 8760 hrs/yr and dividing by the actual operating

hours. This approach helps account for ink and fountain solution variations, production limitations, per-press chemical tracking problems and represents a more realistic way to calculate PTE.

The ENVIROPRINT method also clearly shows roughly 90 percent of emissions from an alcohol-free, lithographic press are due to cleanup solvents. Thus, the PTE for these presses is affected more by the annual number of cleanups or changeovers rather than ink usage or operating hours. ***Because annual press emissions can fluctuate, the PIO has instructed users of the ENVIROPRINT manual to calculate per-press emission annually to determine continued exemption status. If the PTE increases above 3 TPY, the facility should apply for and obtain the appropriate permits.***

The ENVIROPRINT method is presented on the attached series of worksheets.

RC/TK

July 7, 1997

References:

Draft CTG "Control of Volatile Organic Compound Emissions from Offset Lithographic Printing", September 1993, USEPA.

Alternative Control Techniques (ACT) Document "Offset Lithographic Printing", June 1994, USEPA.

Report "Ink Oil Loss in Sheet-Fed Lithographic Printing", October 1992, Battelle Memorial Institute to the Graphic Arts Education and Research Foundation.

Report "Ink Oil Retention in Non-Heatset Web Offset Newsprint", January 1996, Battelle Memorial Institute to the Graphic Arts Education and Research Foundation.

ENVIROPRINT: "A Self-Help Guide to Environmentally Sound Printing Operations". 1995, Printing Industry of Ohio.

Case Study - Air Permitting

Smith Press, a commercial printer in Ohio, received a surprise inspection by Ohio Environmental Protection Agency personnel yesterday. The inspectors believe the company's four printing presses require air permits. Company officials were unable to find any paperwork explaining emissions of volatile organic compounds (VOCs) from the presses. Ohio EPA personnel allow Smith Press five days to document VOC emissions from each press and submit this information, otherwise Ohio EPA will issue a letter of violation.

Material safety data sheets (MSDSs) are included to provide information on the VOC content. Based on the following information, determine if each press is exempt or requires an air permit.

Press 1 - 4 color Sheetfed Offset Press (34.5" x 40"); 5,000 impressions/hour;

Press 2 - 1 color Sheetfed Offset Press (36" x 40"); 5,000 impressions/hour;

Press 3 - 1 color Letterpress (12" x 18"); 2,000 impressions/hour;

Press 4 - 4 color Nonheatset web forms press (11.5" x 17.5"); 12,000 impressions/hour.

Operation runs 8 hours per day, 5 days per week, 50 weeks per year, except Press 1 which runs an extra 600 hours.

1994 (Jan. through December) Chemical Usage (Smith Press uses six chemical products on their presses, although not all products are used on all presses.)

- Brand “A” nonheatset web ink = 1771 lbs
- Brand “B” sheetfed ink = 6005 lbs
- Blanket and roller wash = 425 gallons
- Isopropyl alcohol* = 290 gallons
- Alcohol replacement = 35 gallons
- Fountain concentrate = 165 gallons

*Note: The nonheatset web press is “alcohol free.”

Form 1: Press - Listing

(summarizes data on printing presses)

Company Name: Smith Press - Example
Street Address: _____
City: _____ State: ___
Zip Code:_____

Prepared By: _____
Date Prepared: _____

Press Type[1]	Internal ID[2]	Manufacturer & Model Number	Serial Number	Press Speed[3] (Impressions/hr)	Impression Area (sq inches)	Print Units	Coating Unit (yes/no)	Hourly Print Capacity[4] (million sq inches/hr)
Sheetfed Offset	**Press 1**			**5000**	**(34.5” x 40”) 1380**	**4**	**No**	**(5000 x 1380 x 4) 27.600**
Sheetfed Offset	**Press 2**			**5000**	**(36” x 40”) 1440**	**1**	**No**	**(5000 x 1440 x 1) 7.200**

Letter press	**Press 3**			**2000**	**(12" x 18") 216**	**1**	**No**	**2000 x 216 x 1 0.432**
Non-heatset web - forms	**Press 4**			**12,000**	**(11.5" x 17.5") 201.25**	**4**	**No**	**(12,000 x 201.25 x 4) 9.660**

Notes:

1. **General press types (sheetfed offset, letterpress, nonheatset web offset, heatset web offset, etc.).**
2. **Unique press identification number or description. As examples, use Press 1, Press 2, or other numbering system in use at your operation.**
3. **May use average value.**
4. **Hourly Print Capacity = (Press Speed) x (Impression Area) x (Print Units) / (1,000,000).**

Form 2: Press Chemical Usage

(identifies chemical products used on each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Category	**Press Chemical Product[1]**	**Press - Internal ID's[2]**									
			Press 1	Press 2	Press 3	Press 4					
Ink & Varnish	Brand "A" nonheatset web ink					x					
	Brand "B" sheetfed ink		x	x	x						

Cleanup Solvent	Blanket and roller wash		x	x	x	x			
Fountain Solution	Isopropyl alcohol		x	x					
	Alcohol replacement					x			
	Fountain concentrate		x	x		x			
In-Line Coating									

Notes:
1. List all press chemical products. Inks may be grouped together by type (e.g., sheetfed offset inks, web offset heatset inks).
2. List internal ID (each press). For each press chemical product, mark or check every press using the product.

Form 3: Press Chemical Product Tracking Sheet

(tracks annual chemical product usage and organic compound content)

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

Press Chemical Category	Press Chemical Product[2]	Usage Amount[3]		OC Content[4]		Emission Factor[5]	Annual Product OC Emissions[6]
		(lbs)	(gal)	(% by wt.)	(lbs/gal)	(%)	(lbs)
Ink & Varnish	Brand "A" nonheatset ink	1771		20 (max)		5	17.7
	Brand "B" sheetfed ink	6005		15 (max)		5	45.0
Cleanup Solvent	Blanket & roller wash		425		6.92	50	1470.5
Fountain Solution Additives	Isopropyl alcohol		290		6.54	100	1896.6
	Alcohol replacement		35		7.14	100	249.9
	Fountain concentrate		165		0.99	100	163.4

In-Line Coating							

Total = 3843.1

Notes:

1. Annual usage.
2. List press chemical products identified on Form 2.
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. Emission factor indicates the likelihood OC's in the press chemical product will be emitted. Normal emission factor is 100%. For non-heatset inks, an emission factor of 5% is appropriate (5% of OC's content are emitted). For web offset heatset inks, an emission factor of 80% is appropriate. Factors for other materials may be applicable (see Subsection 1).
6. Annual Product OC Emissions = (Usage Amount) x (OC Content) x (Emission Factor)

Form 4: Chemical Product Per Press Allocation Worksheet

(calculate factor to use in allocating chemical usage to each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Product[1]: Brand "A" Nonheatset Web Ink

Additional Press Chemical Products allocated to the same presses: Alcohol Replacement _____,

_____, _____, _____, _____,

_____, _____, _____, _____.

Internal ID[2]	**Hourly Press Capacity[3]** (million sq inches/hr)	**Annual Press Hours[4]**	**Annual Press Capacity[5]** (million sq inches/yr)	**Product Per Press Allocation Factor[6]**
Press 4	9.660	2000	19,320	1.0

			∑= 19,320	

Notes:

1. Identify one press chemical product for allocating usage among presses. List any other products that are used on the same presses and would have the same allocation factor. Use additional copies of this form to calculate allocation for other products that do not have the same allocation factor.
2. List internal IDs for other presses that use the same press chemical product.
3. Enter Hourly Press Capacity value (from Form 1) for each press.
4. Enter hours per year press is normally manned. As an example, a press manned one shift - 8 hours/day, 5 days/week, and 50 weeks/year has 2000 available hours per year.
5. Annual Press Capacity = (Hourly Press Capacity) x (Annual Press Hours)
6. Product Per Press Allocation Factor = (Annual Press Capacity)/ (∑ of Annual Press Capacity values). As a check, the sum of all Chemical Product Allocation Factors should equal 1.

Form 4: Chemical Product Per Press Allocation Worksheet

(calculate factor to use in allocating chemical usage to each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Product[1]: Brand "B" Sheetfed Ink

Additional Press Chemical Products allocated to the same presses: _____,

_____, _____, _____, _____,

_____, _____, _____, _____.

Internal ID[2]	**Hourly Press Capacity[3]** (million sq inches/hr)	**Annual Press Hours[4]**	**Annual Press Capacity[5]** (million sq inches/yr)	**Product Per Press Allocation Factor[6]**
Press 1	27.600	2600	71,760	0.824
Press 2	7.200	2000	14,400	0.165
Press 3	0.432	2000	864	0.010

			∑= 87,024	

Notes:

1. Identify one press chemical product for allocating usage among presses. List any other products that are used on the same presses and would have the same allocation factor. Use additional copies of this form to calculate allocation for other products that do not have the same allocation factor.
2. List internal IDs for other presses that use the same press chemical product.
3. Enter Hourly Press Capacity value (from Form 1) for each press.
4. Enter hours per year press is normally manned. As an example, a press manned one shift - 8 hours/day, 5 days/week, and 50 weeks/year has 2000 available hours per year.
5. Annual Press Capacity = (Hourly Press Capacity) x (Annual Press Hours)
6. Product Per Press Allocation Factor = (Annual Press Capacity)/ (∑ of Annual Press Capacity values). As a check, the sum of all Chemical Product Allocation Factors should equal 1.

Form 4: Chemical Product Per Press Allocation Worksheet

(calculate factor to use in allocating chemical usage to each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Product[1]: Blanket and Roller Wash

Additional Press Chemical Products allocated to the same presses: _____,

_____, _____, _____, _____,

_____, _____, _____, _____.

Internal ID[2]	**Hourly Press Capacity[3]** (million sq inches/hr)	**Annual Press Hours[4]**	**Annual Press Capacity[5]** (million sq inches/yr)	**Product Per Press Allocation Factor[6]**
Press 1	27.600	2600	71,760	0.675
Press 2	7.200	2000	14,400	0.135
Press 3	0.432	2000	864	0.008
Press 4	9.660	2000	19,320	0.182

			∑= 106,344	

Notes:

1. Identify one press chemical product for allocating usage among presses. List any other products that are used on the same presses and would have the same allocation factor. Use additional copies of this form to calculate allocation for other products that do not have the same allocation factor.
2. List internal IDs for other presses that use the same press chemical product.
3. Enter Hourly Press Capacity value (from Form 1) for each press.
4. Enter hours per year press is normally manned. As an example, a press manned one shift - 8 hours/day, 5 days/week, and 50 weeks/year has 2000 available hours per year.
5. Annual Press Capacity = (Hourly Press Capacity) x (Annual Press Hours)
6. Product Per Press Allocation Factor = (Annual Press Capacity)/ (∑ of Annual Press Capacity values). As a check, the sum of all Chemical Product Allocation Factors should equal 1.

Form 4: Chemical Product Per Press Allocation Worksheet

(calculate factor to use in allocating chemical usage to each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Product[1]: Isopropyl Alcohol

Additional Press Chemical Products allocated to the same presses: _____,

_____, _____, _____, _____,

_____, _____, _____, _____.

Internal ID[2]	**Hourly Press Capacity[3]** (million sq inches/hr)	**Annual Press Hours[4]**	**Annual Press Capacity[5]** (million sq inches/yr)	**Product Per Press Allocation Factor[6]**
Press 1	27.600	2600	71,760	0.833
Press 2	7.200	2000	14,400	0.167

			∑= 86,160	

Notes:

1. Identify one press chemical product for allocating usage among presses. List any other products that are used on the same presses and would have the same allocation factor. Use additional copies of this form to calculate allocation for other products that do not have the same allocation factor.
2. List internal IDs for other presses that use the same press chemical product.
3. Enter Hourly Press Capacity value (from Form 1) for each press.
4. Enter hours per year press is normally manned. As an example, a press manned one shift - 8 hours/day, 5 days/week, and 50 weeks/year has 2000 available hours per year.
5. Annual Press Capacity = (Hourly Press Capacity) x (Annual Press Hours)
6. Product Per Press Allocation Factor = (Annual Press Capacity)/ (∑ of Annual Press Capacity values). As a check, the sum of all Chemical Product Allocation Factors should equal 1.

Form 4: Chemical Product Per Press Allocation Worksheet

(calculate factor to use in allocating chemical usage to each press)

Company: Smith Press Prepared By: _____ Date: _____

Press Chemical Product[1]: Fountain Concentrate

Additional Press Chemical Products allocated to the same presses: _____,

_____, _____, _____, _____,

_____, _____, _____, _____.

Internal ID[2]	**Hourly Press Capacity[3]** (million sq inches/hr)	**Annual Press Hours[4]**	**Annual Press Capacity[5]** (million sq inches/yr)	**Product Per Press Allocation Factor[6]**
Press 1	27.600	2600	71,760	0.680
Press 2	7.200	2000	14,400	0.137
Press 4	9.660	2000	19,320	0.183

			∑= 105,480	

Notes:

1. Identify one press chemical product for allocating usage among presses. List any other products that are used on the same presses and would have the same allocation factor. Use additional copies of this form to calculate allocation for other products that do not have the same allocation factor.
2. List internal IDs for other presses that use the same press chemical product.
3. Enter Hourly Press Capacity value (from Form 1) for each press.
4. Enter hours per year press is normally manned. As an example, a press manned one shift - 8 hours/day, 5 days/week, and 50 weeks/year has 2000 available hours per year.
5. Annual Press Capacity = (Hourly Press Capacity) x (Annual Press Hours)
6. Product Per Press Allocation Factor = (Annual Press Capacity)/ (∑ of Annual Press Capacity values). As a check, the sum of all Chemical Product Allocation Factors should equal 1.

Form 5: Press OC Emission Summary Worksheet

(calculates actual emissions and potential to emit, OC emissions)

Company: Smith Press

Date: _____

Prepared By: _____

Emission Period[1]: Beginning _____ (month/year)

Ending _____ (month/year)

Emission Summary For: Press 1 (Insert Internal ID, complete form for each press)

Press Chemical Product[2]	**Annual Product OC Emissions[3]** (lbs)	**Product Per Press Allocation Factor[4]**	**Actual Press OC Emissions[5]** (lbs/year)
Brand "B" Sheetfed ink	45.0	0.824	37.1
Blanket and Roller Wash	1470.5	0.675	992.6
Isopropyl alcohol	1896.6	0.833	1579.9
Fountain Concentrate	163.4	0.680	111.1

		Total (lbs/year)	2721
		Total (tons/year)	1.36

Maximum Available Press Hours[6] = 8760

Maximum Annual Potential OC Emissions[7] = 4.58 **tons/year**

Notes:

1. Period must be 12 months.
2. List chemical products used on press.
3. Enter Annual Product OC Emissions from Form 3.
4. Enter Chemical Product Allocation Factor (from Form 4).
5. Actual Press OC Emissions = (Annual Product OC Emissions) x (Product Per Press Allocation Factor).
6. Maximum Available Press Hours (normally 8760 hours, unless inherent physical limitations are documented.)
7. OC "Potential to Emit" = (Actual Press OC Emissions (tons/yr)) x (Maximum Available Press hours) / (Annual Press Hours from Form 4). Nonheatset or sheetfed presses with an OC to emit less than 3 tons/yr are exempt from permitting.

Form 5: Press OC Emission Summary Worksheet

(calculates actual emissions and potential to emit, OC emissions)

Company: Smith Press
Date: _____
Prepared By: _____

Emission Period[1]: Beginning _____ (month/year)
Ending _____ (month/year)

Emission Summary For: Press 2 (Insert Internal ID, complete form for each press)

Press Chemical Product[2]	**Annual Product OC Emissions[3]** (lbs)	**Product Per Press Allocation Factor[4]**	**Actual Press OC Emissions[5]** (lbs/year)
Brand "B" Sheetfed Ink	45.0	0.165	7.4
Blanket and Roller Wash	1470.5	0.135	198.5
Isopropyl alcohol	1896.6	0.167	316.7
Fountain concentrate	163.4	0.137	22.4

Total (lbs/year)	545
Total (tons/year)	0.273

Maximum Available Press Hours[6] = 8760

Maximum Annual Potential OC Emissions[7] = 1.19 **tons/year**

Notes:

1. Period must be 12 months.
2. List chemical products used on press.
3. Enter Annual Product OC Emissions from Form 3.
4. Enter Chemical Product Allocation Factor (from Form 4).
5. Actual Press OC Emissions = (Annual Product OC Emissions) x (Product Per Press Allocation Factor).
6. Maximum Available Press Hours (normally 8760 hours, unless inherent physical limitations are documented.)
7. OC "Potential to Emit" = (Actual Press OC Emissions (tons/yr)) x (Maximum Available Press hours) / (Annual Press Hours from Form 4). Nonheatset or sheetfed presses with an OC to emit less than 3 tons/yr are exempt from permitting.

Form 5: Press OC Emission Summary Worksheet

(calculates actual emissions and potential to emit, OC emissions)

Company: Smith Press

Date: _____

Prepared By: _____

Emission Period[1]: Beginning _____ (month/year)

Ending _____ (month/year)

Emission Summary For: Press 3 (Insert Internal ID, complete form for each press)

Press Chemical Product[2]	**Annual Product OC Emissions[3]** (lbs)	**Product Per Press Allocation Factor[4]**	**Actual Press OC Emissions[5]** (lbs/year)
Brand "B" Sheetfed Ink	45	0.010	0.5
Blanket and Roller Wash	1470.5	0.008	11.8

Total (lbs/year)	12.3
Total (tons/year)	0.006

Maximum Available Press Hours[6] = 8760

Maximum Annual Potential OC Emissions[7] = 0.03 **tons/year**

Notes:

1. Period must be 12 months.
2. List chemical products used on press.
3. Enter Annual Product OC Emissions from Form 3.
4. Enter Chemical Product Allocation Factor (from Form 4).
5. Actual Press OC Emissions = (Annual Product OC Emissions) x (Product Per Press Allocation Factor).
6. Maximum Available Press Hours (normally 8760 hours, unless inherent physical limitations are documented.)
7. OC "Potential to Emit" = (Actual Press OC Emissions (tons/yr)) x (Maximum Available Press hours) / (Annual Press Hours from Form 4). Nonheatset or sheetfed presses with an OC to emit less than 3 tons/yr are exempt from permitting.

Form 5: Press OC Emission Summary Worksheet

(calculates actual emissions and potential to emit, OC emissions)

Company: Smith Press

Date: _____

Prepared By: _____

Emission Period[1]: Beginning _____ (month/year)

Ending _____ (month/year)

Emission Summary For: Press 4 (Insert Internal ID, complete form for each press)

Press Chemical Product[2]	**Annual Product OC Emissions[3]** (lbs)	**Product Per Press Allocation Factor[4]**	**Actual Press OC Emissions[5]** (lbs/year)
Brand "A" nonheatset ink	17.7	1.0	17.7
Alcohol replacement	249.9	1.0	249.9
Blanket and Roller wash	1470.5	0.182	267.6
Fountain concentrate	163.4	0.183	29.9

Total (lbs/year)	565
Total (tons/year)	0.283

Maximum Available Press Hours[6] = 8760

Maximum Annual Potential OC Emissions[7] = 1.24 **tons/year**

Notes:

1. Period must be 12 months.
2. List chemical products used on press.
3. Enter Annual Product OC Emissions from Form 3.
4. Enter Chemical Product Allocation Factor (from Form 4).
5. Actual Press OC Emissions = (Annual Product OC Emissions) x (Product Per Press Allocation Factor).
6. Maximum Available Press Hours (normally 8760 hours, unless inherent physical limitations are documented.)
7. OC "Potential to Emit" = (Actual Press OC Emissions (tons/yr)) x (Maximum Available Press hours) / (Annual Press Hours from Form 4). Nonheatset or sheetfed presses with an OC to emit less than 3 tons/yr are exempt from permitting.

Form 6: Listing of Exempted and Permitted Air Contaminant Sources

(documents exemptions and air permits)

Exempted Sources

Internal ID	Exemption Type[1]	Exemption Explantion[2]
Press 2	Specific PTI Exemption	Sheetfed press with organic compound potential to emit less than 3 tons per year
Press 3	Specific PTI Exemption	Sheetfed press with organic compound potential to emit less than 3 tons per year
Press 4	Specific PTI Exemption	Nonheatset press with organic compound potential to emit less than 3 tons per year

Permitted Sources

Internal ID	Permit Type[3]	Permit Number	Effective Date[4]	Renewal Date[5]
Press 1	PTI	Must submit application		

Notes:

1. Enter “Specific PTI Exemption” or “De Minimis Exemption.”
2. Document exemption. For a sheetfed press with an OC potential to emit below 3 tons/year, enter “Sheetfed press with organic compound potential to emit less than 3 tons per year”.
3. Enter permit type, which may be PTI, PTO, PTO Registration Status.
4. Enter effective date of permit.
5. Enter renewal date for permit (as a reminder).