INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant

DATE: May 29, 2007

RE: R.R. Donnelley & Sons / 107-24571I-00052

FROM: Nisha Sizemore
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER.dot 03/23/06

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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100 North Senate Avenue
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(800) 451-6027
www.IN.gov/idem

Jessica Ortiz
R. R. Donnelley & Sons Company
600 West State Road 32
Crawfordsville, IN 47933-8964

May 29, 2007

Re: Interim Significant Source Modification Petition
107-24571I-00052

Dear Ms. Ortiz,

On April 11, 2007, the Office of Air Quality (OAQ) received an interim Significant Source Modification petition from R. R. Donnelley & Sons Company located at 1009 Sloan Street, Crawfordsville IN 47933-2743 for construction of six (6) new lithographic printing presses, identified as Presses 301, 302, 303, 304, 305 and 306, to be controlled by two (2) new regenerative thermal oxidizers, identified as RTO-2 and RTO-3.

Public notice of the interim Significant Source Modification petition was published in the *Crawfordsville Journal Review* on April 6, 2007. The public comment period ended on April 20, 2007. The interim Significant Source Modification petition expires on the effective date of the final Significant Source Modification permit. The interim Significant Source Modification petition may be revoked after its effective date upon a written finding by the Indiana Department of Environmental Management (IDEM) that any of the reasons for denial in 326 IAC 2-13-1(h) exist or if the final Significant Source Modification permit is denied. IDEM has reviewed this interim Significant Source Modification petition and has not found any such reason. The facilities specified in the interim Significant Source Modification petition may not operate until the final Significant Permit Modification 107-24641-00052 is issued by OAQ.

The interim Significant Source Modification petition is federally enforceable. Detailed construction and operation conditions will be specified in the final Significant Source Modification permit 107-24571-00052.

If you have any questions regarding this interim Significant Source Modification petition, please contact Allen R. Davidson of my staff at 317-233-5693, or at 1-800-451-6027 (ask for extension 3-5693).

Sincerely,
Original signed by

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

ARD
Enclosure: Interim Permit Evaluation (3 pages)

cc: File - Montgomery County
Montgomery County Health Department
Air Compliance Section - Jennifer Schick
Permit Tracking

Indiana Department of Environmental Management
Office of Air Quality

Interim Significant Source Modification Evaluation Sheet

Company Name:	R. R. Donnelley & Sons Company
Location:	1009 Sloan Street, Crawfordsville IN 47933-2743
Permit No:	107-23923I-00052
Permit Reviewer:	Allen R. Davidson
Date Application Received:	November 22, 2006
Date of Review:	May 29, 2007
Description of Interim Construction:	to add six (6) new lithographic printing presses and two (2) new control devices (thermal oxidizers)
Public Notice Date:	April 6, 2007 to April 20, 2007
Date Application Received + 19 Days:	April 30, 2007

Interim Petition Applicability: 326 IAC 2-13-1

(a) Existing Source with valid permit;

(b) Exemptions:
- (1) construction of a PSD source or PSD modification;
- (2) construction or modification in nonattainment area that would emit those pollutants for which the nonattainment designation is based.
- (3) any modification subject to 326 IAC 2-4.1.

(c) Public notice comment period is 14 calendar days.

Instructions: Check (___) appropriate answers and make a recommendation.

1. Did the applicant submit a written petition for an interim permit?
   - ____ Yes Go to Question 2.
   - ____ No Ignore verbal request.

2. Did the applicant pay $500 toward the interim permit fee?
   - ____ Yes Go to Question 3. Amount paid: _____
   - ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(1).

3. Did the applicant state acceptance of federal enforceability of an interim permit?
   - ____ Yes Go to Question 4.
   - ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(D).

4. Did the applicant or its authorized agent sign the application?
   - ____ Yes Go to Question 5.
   - ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(E).

5. Did the applicant submit a notarized affidavit stating that the applicant will proceed at its own risk (if the interim permit is issued), including, but not limited to:
   - (a) Financial risk,
   - (b) Risk that additional emission controls may be required,
   - (c) Risk that the final permit may be denied.
   - ____ Yes Go to Question 6.
   - ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(F).

6. Did the applicant begin construction prior to submitting the interim permit application?
   ____ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(6).
   ____ No Go to Question 7.

7. What is the type of the interim construction?
   ____ New Source Deny the application pursuant to 326 IAC 2-13-1(a)
   ____ Modification to existing source Go to Question 8.

8. Did the applicant present data in the interim permit that is sufficient to determine PSD, NSPS, NESHAP, and state rule compliance?
   ____ Yes Go to Question 9.
   ____ No Deny the application pursuant to:
   326 IAC 2-13-1(c)(2)(B), for PSD ;
   326 IAC 2-13-1(c)(2)(C), for NSPS or NESHAP;
   326 IAC 2-13-1(c)(2)(C), for state rules.

9. Is the proposed modification to be located in a nonattainment area?
   ____ Yes Go to Question 10.
   ____ No Go to Question 11. County: Montgomery County

10. Will the proposed modification emit the pollutant for which the area is nonattainment in quantities greater than the significant levels?
   ____ Yes Deny the application, pursuant to 326 IAC 2-13-1(a)(2).
   ____ No Go to Question 11.

11. Did the petition include a complete description of the process?
   ____ Yes Go to Question 12.
   ____ No Deny the petition, pursuant to 326 IAC 2-13-1(c)(2).

12. Did the interim permit petition contain conditions accepting either emission controls (baghouse, afterburners, scrubbers, etc.) or enforceable limits or other suitable restriction to avoid PSD applicability; as well as control parameters (incinerator operating temperature, baghouse pressure drop, etc.)? The specific limits must be explicitly spelled out (i.e.: The gas consumption of the boiler shall not exceed 29 million cubic feet per month.) A statement such as that the company agrees to conditions such that PSD rules are not applicable is not acceptable.
   ____ Yes Go to Question 13.
   ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(B).

13. Do the emission controls and/or throughput limits prevent PSD applicability?
   ____ Yes Go to Question 14.
   ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(B).

14. Will the modification, after application of all emission controls and/or throughput limitations comply with all applicable New Source Performance Standards (NSPS) (40 CFR 60)?
   ____ Yes Go to Question 15.
   ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

15. Will the modification, after application of all emission controls and/or throughput limitations comply with all applicable National Emission Standards for Hazardous Air Pollutants (NESHAP)?
   ____ Yes Go to Question 16.
   ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

16. Will the modification, after application of all emission controls and/or throughput limitations, comply with all applicable state rules?
    ____ Yes Go to Question 17.
    ____ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

17. Does the applicant dispute applicability of any applicable state or federal rule?
    ____ Yes Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).
    ____ No Go to Question 18.

18. Is there good reason to believe that the applicant does not intend to construct in accordance with the interim permit petition?
    ____ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(1).
    ____ No Go to Question 19.

19. Is there good reason to believe that information in the petition has been falsified?
    ____ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(7).
    ____ No Approve the interim permit petition.

20. Has the petition been adequately public noticed? A proof of publication copy is necessary.
    ____ Yes Go to Question 21.
    ____ No Deny the application, pursuant to 326 IAC 2-13-1(e).

    Newspaper:

    Date of publication:

21. Were comments received within seventeen (17) days after the public notice of the interim permit? (14 calendar days for comment period + 3 working days for mailing)
    ____ Yes Evaluate the comments received, and make a recommendation.
    ____ No Issue the final interim permit approval.

    Comments:

    _____

    Recommendation: Issue the final interim permit approval.

    Date the applicant was informed of the decision:

    Method of informing the applicant:

107-2457/I-00052

RR DONNELLEY

Publishing & Retail Services

1009 Sloan Street
Crawfordsville, IN 47933
T: 765.362.1300
www.rrdonnelley.com

VIA CERTIFIED MAIL

RECEIVED
State of Indiana
APR 1 1 2007
Environmental Mgmt.
Air Quality

April 2, 2007

Indiana Department of Environmental Management
ATTN: Cashier
100 North Senate Avenue
Indianapolis, IN 46204-2251

Re: Petition for Interim Approval
R.R. Donnelley & Sons Company – Crawfordsville
Source ID 107-00052

To Whom It May Concern:

Please find enclosed the required forms for a petition for interim approval for a Title V permit modification application for the R.R Donnelley & Sons Company facility in Crawfordsville, Indiana. The application is being submitted to the Office of Air Quality concurrently with this petition. The application addresses the proposed installation of six (6) new heatset/nonheatset web offset lithographic printing presses (Presses 301 through 306) and new air pollution control devices. Installation of the new presses will involve a phased construction program, with construction of the first two presses and first additional thermal oxidizer anticipated to begin in 2007. Installation of the next two presses is tentatively scheduled for October 1, 2008, with the final two presses and second additional oxidizer anticipated in October 2009.

The $500 filing fee and proof of publication of the public notice will be submitted to the Office of Air Quality under separate cover.

Should you have any questions regarding this application, please contact me at 765-364-2787.

Sincerely,
RR Donnelley

Jessica O. Ortiz, P.E.
Environmental, Health & Safety

Enclosure

Cc: Dale Kalina

RCVD APR 4 '07

Project Summary

The project that is the subject of this application involves the phased installation of six (6) lithographic web presses and two (2) regenerative thermal oxidizers over the period of 2007 through 2009 at the South Plant of the R.R. Donnelley & Sons Company facility in Crawfordsville. The presses, designated 301, 302, 303, 304, 205, and 306, will function either as heatset presses, with emissions controlled by a thermal oxidizer system comprising existing regenerative thermal oxidizer RTO-1 and the new oxidizers, designated RTO-2 and RTO-3, operating in a parallel mode, with the emissions from the presses shared across the oxidizers, or as nonheatset presses, operating without add-on controls. The proposed project consists of three phases:

- Phase I:

  Based on the capacity of the oxidizers and the installation schedule for the presses, oxidizer RTO-2 will be installed in the initial phase of this project (2007). The combined capacity of RTO-1 and RTO-2 will be adequate to control the heatset emissions from the new presses 301 and 302 (also part of the initial phase) as well as the emissions from presses 260, 261, 262, and 273, currently controlled by RTO-1.

- Phase II:

  RTO-2 will have adequate capacity to control the addition flow from presses 303 and 304 when they are installed in 2008. As a result, Phase II will involve no new pollution control equipment.

- Phase III:

  In order to handle the additional emissions from presses 305 and 306 to be installed in 2009, the third phase of this project will include the installation of RTO-3. This third regenerative thermal oxidizer will complete the oxidizer system and will provide the system with the capability of controlling the four existing presses (260, 261, 262, and 273) and the six new presses (301, 302, 303, 304, 205, and 306) simultaneously.

Regulatory Applicability

Based on the planned, phased construction described above, the proposed press installations have been evaluated as a single project to determine the potential applicability of 326 IAC 2-2 Prevention Of Significant Deterioration (PSD), 326 IAC 2-4.1-1 (New Source Toxics Control) and 326 IAC 8-1-6 New Facilities; General Reduction Requirements (BACT). Based on the project involving only lithographic printing, there are no applicable NSPS or NESHAP regulations for this modification.

- PSD Applicability

For operation in either the heatset or nonheatset mode, the potential to emit for the full project is greater than the PSD applicability threshold of 40 tons of VOC emissions per year.

The application for this project includes a request for a federally enforceable condition to limit the emissions to less than the PSD applicability threshold through the use of the add-on VOC emission control system described above to reduce emissions from heatset printing operations as well as by limiting emissions based on the amount and composition of VOC-containing materials consumed. Compliance with the requested limitation will be based on documentation on a rolling monthly basis that emissions remain below the threshold as described below.

Therefore, 326 IAC 2-2 does not apply to this project.

- New Source Toxics Control Applicability

For operation in the nonheatset mode, the potential to emit for glycol ethers for the full project is greater than 10 tons of HAP emissions per year. No other individual HAP has potential to emit of more than 10 tons per year and the potential to emit for all HAPs combined in either the heatset or nonheatset mode is less than 25 tons per year.

The application for this project includes a request for a federally enforceable condition to limit the emissions to less than the New Source Toxics Control applicability threshold through the use of the add-on emission control system described above to reduce emissions from heatset printing operations as well as by limiting emissions based on the amount and composition of HAP-containing materials consumed. Compliance with the requested limitations of no more than 10 tons per year individual HAP and 25 tons per year total HAP will be based on documentation on a rolling monthly basis that emissions remain below the threshold as described below.

Therefore, 326 IAC 2-4.1-1 does not apply to this project.

- BACT Applicability

In either mode of operation, the potential to emit from this project exceeds the 25 ton per year VOC emissions threshold that triggers BACT under 326 IAC 8-1-6. The attached application includes BACT analyses for both heatset and nonheatset operation.

Based on our analyses, we believe BACT for this project should be defined as:

<u>Heatset</u>

- Use of an add-on control system with a destruction efficiency of no less than 97%.
- Fountain solution limited to no more than 5% VOC.

- Cleaning solvents limited to a composite VOC vapor pressure of 10 mm Hg or less at 20°C or a VOC content of no more than 2.5 pounds per gallon.

Nonheatset

- Use nonheatset inks with a VOC content of no more than 2.5 pounds per gallon.
- Fountain solution limited to no more than 5% VOC.
- Cleaning solvents limited to a composite VOC vapor pressure of 10 mm Hg or less at 20°C or a VOC content of no more than 2.5 pounds per gallon.

Proposed Emissions Limitations

Based on the discussion above, we suggest the following emissions limitations for this project:

Press 301, Press 302, Press 303, Press 304, Press 305, and Press 306 (combined)

Limit: The VOC content delivered to the applicators of the presses shall be limited such that VOC emitted is less than forty (40) tons per twelve (12) consecutive month period.

Limit: The HAP content delivered to the applicator of the press shall be limited such that total HAP emitted is less than twenty-five (25) tons and any individual HAP emitted is less than ten (10) tons per twelve (12) consecutive month period. HAP emitted will be based on the following equation:

Compliance Demonstration

Compliance with the emissions limits will be demonstrated based on monthly records of materials usage and VOC/HAP content, combined with EPA/IDEM accepted retention factors and capture efficiencies and, for heatset operation, the required destruction efficiency of the thermal oxidizer system as follows:

Nonheatset Lithographic Printing – VOC/HAP

Ink VOC/HAP Emissions (E_I):

$$E_I = C_I(1-R_I)$$

Fountain Solution VOC/HAP Emissions (E_F):

$$E_F = C_F$$

Automatic Blanket Wash VOC/HAP Emissions (E_A):

$$E_A = C_A$$

Manual Blanket Wash VOC/HAP Emissions (E_M)

$$E_M = C_M(1-R_M)$$

Total VOC/HAP Emissions (E_T):

$$E_T = E_I + E_F + E_A + E_M$$

Where:

C_I = Ink VOC/HAP consumption = Ink usage (lb) x VOC/HAP content (% by weight)

C_F = Fountain solution VOC/HAP consumption = Fountain solution concentrate usage (gal) x VOC/HAP content (lb/gal)

C_A = Automatic blanket wash VOC/HAP consumption = Automatic blanket wash usage (gal) x VOC/HAP content (lb/gal)

C_M = Manual blanket wash VOC/HAP consumption = Manual blanket wash usage (gal) x VOC/HAP content (lb/gal)

R_I = Retention factor for ink VOC/HAP in printed product (95%*)

R_M = Retention factor for manual blanket wash VOC/HAP in cleaning towels
= 50%* for manual blanket wash with a VOC composite partial vapor pressure less than 10 mmHg at 20°C and the used cleaning towels are kept in closed containers

Notes:

- EPA recommended factors - *Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing* (EPA-453/R-06-002, September 2006)

  Capture and control efficiencies = 0% for all materials
  Retention factors for fountain solution and automatic blanket wash = 0%.

Heatset Lithographic Printing – VOC/HAP

Ink VOC/HAP Emissions (E_I):

$$E_I = C_I(1-R_I)[1-(K)(J_I)]$$

Fountain Solution VOC/HAP Emissions (E_F):

$$E_F = C_F[1-(K)(J_F)]$$

Automatic Blanket Wash VOC/HAP Emissions (E_A):

$$E_A = C_A[1-(K)(J_A)]$$

Manual Blanket Wash VOC/HAP Emissions (E_M)

$$E_M = C_M(1-R_M)$$

Total VOC/HAP Emissions (E_T):

$$E_T = E_I + E_F + E_A + E_M$$

Where:

C_I = Ink VOC/HAP consumption = Ink usage (lb) x VOC/HAP content (% by weight)

C_F = Fountain solution VOC/HAP consumption = Fountain solution concentrate usage (gal) x VOC/HAP content (lb/gal)

C_A = Automatic blanket wash VOC/HAP consumption = Automatic blanket wash usage (gal) x VOC/HAP content (lb/gal)

C_M = Manual blanket wash VOC/HAP consumption= Manual blanket wash usage (gal) x VOC/HAP content (lb/gal)

R_I = Retention factor for ink VOC/HAP retained in printed product (20%*)

R_M = Retention factor for manual blanket wash VOC/HAP in cleaning towels
= 50%* for manual blanket wash with a VOC composite partial vapor pressure less than 10 mmHg at 20°C and the used cleaning towels are kept in closed containers

K = Permit required control efficiency of oxidizer
= 97% if operated at required minimum temperature

J_I = Capture efficiency of dryer and control system for ink VOC/HAP (100%*)

J_F = Capture efficiency of dryer and control system for fountain solution VOC/HAP (70%*)

J_A = Capture efficiency of dryer and control system for automatic blanket wash VOC/HAP
= 40%* for automatic blanket wash with a vapor pressure less than 10 mmHg at 20°C

Notes:

* EPA recommended factors - *Control Techniques Guidelines for Offset Lithographic Printing and Letterpress Printing* (EPA-453/R-06-002, September 2006)

Retention factors for fountain solution and automatic blanket wash = 0%.

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 301 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	42.05	1.01	4.42
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	0.35	1.53
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	46.04	2.84	12.44

Total VOCs Applied 46.04 lb/hr 201.64 T/Y

Potential to Emit 2.84 lb/hr 12.44 T/Y

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	23.83	0.57	1.86
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.20	0.64
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	26.07	1.60	5.19

Total VOCs Applied 26.07 lb/hr 84.72 T/Y

Total Emissions 1.60 lb/hr 5.19 T/Y

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 302 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	11.38	96.94	99,672	849,201	38.78	0.93	4.08
Fountain Solution Concentrate	0.94	8.48	8,272	74,305	1.00	0.32	1.41
Manual Cleaning Solvent	0.36	2.42	3,182	21,230	2.42	1.21	5.31
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	42.48	2.63	11.53
				Total VOCs Applied	42.48 lb/hr		186.04 T/Y
				Potential to Emit	**2.63 lb/hr**		**11.53 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.45	54.93	41,909	357,065	21.97	0.53	1.71
Fountain Solution Concentrate	0.54	4.81	3,478	31,243	0.57	0.18	0.59
Manual Cleaning Solvent	0.21	1.37	1,338	8,927	1.37	0.69	2.23
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	24.05	1.48	4.81
				Total VOCs Applied	24.05 lb/hr		78.17 T/Y
				Total Emissions	**1.48 lb/hr**		**4.81 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
1,700 fpm press speed
80.78 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
1,445 fpm press speed
68.67 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 303 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	42.05	1.01	4.42
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	0.35	1.53
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	46.04	2.84	12.44
				Total VOCs Applied	46.04 lb/hr		201.64 T/Y
				Potential to Emit	**2.84 lb/hr**		**12.44 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	23.83	0.57	1.86
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.20	0.64
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	26.07	1.60	5.19
				Total VOCs Applied	26.07 lb/hr		84.72 T/Y
				Total Emissions	**1.60 lb/hr**		**5.19 T/Y**

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 304 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	17.71	150.92	155,167	1,322,021	60.37	1.45	6.35
Fountain Solution Concentrate	1.47	13.21	12,877	115,677	1.56	0.50	2.19
Manual Cleaning Solvent	0.57	3.77	4,954	33,051	3.77	1.89	8.26
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	65.97	4.00	17.54
				Total VOCs Applied	65.97 lb/hr		288.96 T/Y
				Potential to Emit	**4.00 lb/hr**		**17.54 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	10.04	85.52	65,243	555,872	34.21	0.82	2.67
Fountain Solution Concentrate	0.83	7.48	5,415	48,639	0.88	0.28	0.92
Manual Cleaning Solvent	0.32	2.14	2,083	13,897	2.14	1.07	3.47
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	37.37	2.26	7.34
				Total VOCs Applied	37.37 lb/hr		121.44 T/Y
				Total Emissions	**2.26 lb/hr**		**7.34 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
2,647 fpm press speed
125.76 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
2,250 fpm press speed
106.90 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 305 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	42.05	1.01	4.42
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	0.35	1.53
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	46.04	2.84	12.44
				Total VOCs Applied	46.04 lb/hr		201.64 T/Y
				Potential to Emit	**2.84 lb/hr**		**12.44 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	23.83	0.57	1.86
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.20	0.64
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	26.07	1.60	5.19
				Total VOCs Applied	26.07 lb/hr		84.72 T/Y
				Total Emissions	**1.60 lb/hr**		**5.19 T/Y**

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Web Offset Press 306 - Heatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	17.71	150.92	155,167	1,322,021	60.37	1.45	6.35
Fountain Solution Concentrate	1.47	13.21	12,877	115,677	1.56	0.50	2.19
Manual Cleaning Solvent	0.57	3.77	4,954	33,051	3.77	1.89	8.26
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.17	0.74
				Total	65.97	4.00	17.54
				Total VOCs Applied	65.97 lb/hr		288.96 T/Y
				Potential to Emit	**4.00 lb/hr**		**17.54 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	10.04	85.52	65,243	555,872	34.21	0.82	2.67
Fountain Solution Concentrate	0.83	7.48	5,415	48,639	0.88	0.28	0.92
Manual Cleaning Solvent	0.32	2.14	2,083	13,897	2.14	1.07	3.47
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.08	0.27
				Total	37.37	2.26	7.34
				Total VOCs Applied	37.37 lb/hr		121.44 T/Y
				Total Emissions	**2.26 lb/hr**		**7.34 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
2,647 fpm press speed
125.76 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
2,250 fpm press speed
106.90 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 1 - VOC Emissions from Heatset Operations

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	83.82	714.13	734,248	6,255,796	285.65	6.86	30.03
Fountain Solution Concentrate	6.96	62.49	60,935	547,382	7.37	2.37	10.37
Manual Cleaning Solvent	2.68	17.85	23,440	156,395	17.85	8.93	39.10
Automatic Cleaning Solvent	0.75	5.38	6,570	47,123	1.65	1.01	4.42
				Total	312.53	19.16	83.92

Total VOCs Applied 312.53 lb/hr 1,368.88 T/Y

Potential to Emit 19.16 lb/hr 83.92 T/Y

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	47.50	404.67	308,731	2,630,386	161.87	3.88	12.63
Fountain Solution Concentrate	3.94	35.41	25,621	230,159	4.18	1.34	4.36
Manual Cleaning Solvent	1.52	10.12	9,856	65,760	10.12	5.06	16.44
Automatic Cleaning Solvent	0.38	2.69	2,438	17,483	0.83	0.50	1.64
				Total	176.99	10.79	35.07

Total VOCs Applied 176.99 lb/hr 575.22 T/Y

Total Emissions 10.79 lb/hr 35.07 T/Y

Composition Data

Ink	40.0%	VOC	8.52	lb/gal
Fountain Solution Concentrate	11.80%	VOC	8.98	lb/gal
Manual Cleaning Solvent	100%	VOC	6.67	lb/gal
Automatic Cleaning Solvent	30.67%	VOC	7.17	lb/gal

Emissions/Retention Data

Ink Oil VOC	20%	Retention
	80%	Emissions
	100%	Capture
Fountain Solution VOC	0%	Retention
	100%	Emissions
	70%	Capture
Manual Cleaning Solvent VOC	50%	Retention
	50%	Emissions
	0%	Capture
Automatic Cleaning Solvent VOC	0%	Retention
	100%	Emissions
	40%	Capture

Destruction Efficiency of Control Device 97%

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 301 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	11.56	0.58	2.53
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	1.09	4.75
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	15.55	3.25	14.25
				Total VOCs Applied	15.55 lb/hr		68.12 T/Y
				Potential to Emit	**3.25 lb/hr**		**14.25 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	6.55	0.33	1.06
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.62	2.00
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	8.79	1.82	5.93
				Total VOCs Applied	8.79 lb/hr		28.58 T/Y
				Total Emissions	**1.82 lb/hr**		**5.93 T/Y**

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 302 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	11.38	96.94	99,672	849,201	10.66	0.53	2.34
Fountain Solution Concentrate	0.94	8.48	8,272	74,305	1.00	1.00	4.38
Manual Cleaning Solvent	0.36	2.42	3,182	21,230	2.42	1.21	5.31
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	14.36	3.02	13.23
				Total VOCs Applied	14.36 lb/hr		62.91 T/Y
				Potential to Emit	**3.02 lb/hr**		**13.23 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.45	54.93	41,909	357,065	6.04	0.30	0.98
Fountain Solution Concentrate	0.54	4.81	3,478	31,243	0.57	0.57	1.84
Manual Cleaning Solvent	0.21	1.37	1,338	8,927	1.37	0.69	2.23
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	8.12	1.69	5.50
				Total VOCs Applied	8.12 lb/hr		26.39 T/Y
				Total Emissions	**1.69 lb/hr**		**5.50 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
1,700 fpm press speed
80.78 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
1,445 fpm press speed
68.67 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 303 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	11.56	0.58	2.53
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	1.09	4.75
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	15.55	3.25	14.25

Total VOCs Applied 15.55 lb/hr 68.12 T/Y

Potential to Emit 3.25 lb/hr 14.25 T/Y

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	6.55	0.33	1.06
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.62	2.00
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	8.79	1.82	5.93

Total VOCs Applied 8.79 lb/hr 28.58 T/Y

Total Emissions 1.82 lb/hr 5.93 T/Y

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 304 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	17.71	150.92	155,167	1,322,021	16.60	0.83	3.64
Fountain Solution Concentrate	1.47	13.21	12,877	115,677	1.56	1.56	6.82
Manual Cleaning Solvent	0.57	3.77	4,954	33,051	3.77	1.89	8.26
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	22.21	4.55	19.93
				Total VOCs Applied	22.21 lb/hr		97.27 T/Y
				Potential to Emit	**4.55 lb/hr**		19.93 T/Y

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	10.04	85.52	65,243	555,872	9.41	0.47	1.53
Fountain Solution Concentrate	0.83	7.48	5,415	48,639	0.88	0.88	2.87
Manual Cleaning Solvent	0.32	2.14	2,083	13,897	2.14	1.07	3.47
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	12.57	2.56	8.32
				Total VOCs Applied	12.57 lb/hr		40.84 T/Y
				Total Emissions	**2.56 lb/hr**		**8.32 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
2,647 fpm press speed
125.76 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
2,250 fpm press speed
106.90 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 305 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	12.34	105.12	108,081	920,851	11.56	0.58	2.53
Fountain Solution Concentrate	1.02	9.20	8,970	80,574	1.09	1.09	4.75
Manual Cleaning Solvent	0.39	2.63	3,450	23,021	2.63	1.31	5.76
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	15.55	3.25	14.25

Total VOCs Applied	15.55 lb/hr	68.12 T/Y
Potential to Emit	**3.25 lb/hr**	**14.25 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	6.99	59.57	45,445	387,192	6.55	0.33	1.06
Fountain Solution Concentrate	0.58	5.21	3,771	33,879	0.62	0.62	2.00
Manual Cleaning Solvent	0.22	1.49	1,451	9,680	1.49	0.74	2.42
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	8.79	1.82	5.93

Total VOCs Applied	8.79 lb/hr	28.58 T/Y
Total Emissions	**1.82 lb/hr**	**5.93 T/Y**

Maximum

1 webs
2 units
50 in. web width

8,760 hours/year
2,433 fpm press speed
87.60 million sq in/hour

Typical

1 webs
2 units
50 in. web width

6,500 hours/year
2,068 fpm press speed
74.46 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Web Offset Press 306 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	17.71	150.92	155,167	1,322,021	16.60	0.83	3.64
Fountain Solution Concentrate	1.47	13.21	12,877	115,677	1.56	1.56	6.82
Manual Cleaning Solvent	0.57	3.77	4,954	33,051	3.77	1.89	8.26
Automatic Cleaning Solvent	0.13	0.90	1,095	7,854	0.28	0.28	1.20
				Total	22.21	4.55	19.93
				Total VOCs Applied	22.21 lb/hr		97.27 T/Y
				Potential to Emit	**4.55 lb/hr**		**19.93 T/Y**

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Ink	10.04	85.52	65,243	555,872	9.41	0.47	1.53
Fountain Solution Concentrate	0.83	7.48	5,415	48,639	0.88	0.88	2.87
Manual Cleaning Solvent	0.32	2.14	2,083	13,897	2.14	1.07	3.47
Automatic Cleaning Solvent	0.06	0.45	406	2,914	0.14	0.14	0.45
				Total	12.57	2.56	8.32
				Total VOCs Applied	12.57 lb/hr		40.84 T/Y
				Total Emissions	**2.56 lb/hr**		**8.32 T/Y**

Maximum

1 webs
2 units
66 in. web width

8,760 hours/year
2,647 fpm press speed
125.76 million sq in/hour

Typical

1 webs
2 units
66 in. web width

6,500 hours/year
2,250 fpm press speed
106.90 million sq in/hour

Maximum

1.20 lb ink/million in^2
0.105 lb fountain solution concentrate/million in^2
0.030 lb manual cleaning solvent/million in^2
2 automatic washes/hour @ 8 ounces/wash

Typical

0.80 lb ink/million in^2
0.070 lb fountain solution concentrate/million in^2
0.020 lb manual cleaning solvent/million in^2
1 automatic washes/hour @ 8 ounces/wash

Attachment 2 - VOC Emissions from Nonheatset Operations

Combined Web Offset Presses 301-306 - Nonheatset

Materials Used and Emissions - Maximum

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Paper		25,057		219,501,625			
Ink	83.82	714.13	734,248	6,255,796	78.55	3.93	17.20
Fountain Solution Concentrate	6.96	62.49	60,935	547,382	7.37	7.37	32.30
Manual Cleaning Solvent	2.68	17.85	23,440	156,395	17.85	8.93	39.10
Automatic Cleaning Solvent	0.75	5.38	6,570	47,123	1.65	1.65	7.23
				Total	105.43	21.88	95.82

Total VOCs Applied	105.43 lb/hr	461.79	T/Y
Potential to Emit	21.88 lb/hr	95.82	T/Y

Materials Used and Emissions - Typical

	Material Applied (gal/hr)	Material Applied (#/hr)	Material Applied (gal/yr)	Material Applied (#/yr)	VOC Applied (#/hr)	Total Emissions (#/hr)	Total Emissions (T/Y)
Paper		21,299		138,441,379			
Ink	47.50	404.67	308,731	2,630,386	44.51	2.23	7.23
Fountain Solution Concentrate	3.94	35.41	25,621	230,159	4.18	4.18	13.58
Manual Cleaning Solvent	1.52	10.12	9,856	65,760	10.12	5.06	16.44
Automatic Cleaning Solvent	0.38	2.69	2,438	17,483	0.83	0.83	2.68
				Total	59.63	12.29	39.93

Total VOCs Applied	59.63 lb/hr	193.81	T/Y
Total Emissions	12.29 lb/hr	39.93	T/Y

Composition Data

Ink	11.0%	VOC	8.52 lb/gal
Fountain Solution Concentrate	11.80%	VOC	8.98 lb/gal
Manual Cleaning Solvent	100%	VOC	6.67 lb/gal
Automatic Cleaning Solvent	30.67%	VOC	7.17 lb/gal

Emissions/Retention Data

Ink Oil VOC	95%	Retention
	5%	Emissions
Fountain Solution VOC	0%	Retention
	100%	Emissions
Manual Cleaning Solvent VOC	50%	Retention
	50%	Emissions
Automatic Cleaning Solvent VOC	0%	Retention
	100%	Emissions

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 301 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	42.05	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.17	0.76
Ethylene Glycol		0.27	0.09	0.38
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	46.04	0.83	0.27	1.19

Total HAPs Applied	0.83 lb/hr	3.65 T/Y
HAP Potential to Emit	**0.27 lb/hr**	**1.19 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	23.83	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.10	0.32
Ethylene Glycol		0.15	0.05	0.16
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	26.07	0.47	0.15	0.50

Total HAPs Applied	0.47 lb/hr	1.53 T/Y
HAP Emissions	**0.15 lb/hr**	**0.50 T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 302 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	10.66	0.00	0.00	0.00
Fountain Solution Concentrate	1.00			
Glycol Ether		0.50	0.16	0.70
Ethylene Glycol		0.25	0.08	0.35
Manual Cleaning Solvent	2.42			
Xylenes		0.01	0.01	0.02
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	14.36	0.77	0.25	1.09

Total HAPs Applied	0.77 lb/hr	3.37 T/Y
HAP Potential to Emit	**0.25 lb/hr**	**1.09 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	21.97	0.00	0.00	0.00
Fountain Solution Concentrate	0.57			
Glycol Ether		0.28	0.09	0.30
Ethylene Glycol		0.14	0.05	0.15
Manual Cleaning Solvent	1.37			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	24.05	0.44	0.14	0.46

Total HAPs Applied	0.44 lb/hr	1.42 T/Y
HAP Emissions	**0.14 lb/hr**	**0.46 T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 303 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	42.05	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.17	0.76
Ethylene Glycol		0.27	0.09	0.38
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	46.04	0.83	0.27	1.19
Total HAPs Applied		0.83 lb/hr		3.65 T/Y
HAP Potential to Emit		**0.27 lb/hr**		**1.19 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	23.83	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.10	0.32
Ethylene Glycol		0.15	0.05	0.16
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	26.07	0.47	0.15	0.50
Total HAPs Applied		0.47 lb/hr		1.53 T/Y
HAP Emissions		**0.15 lb/hr**		**0.50 T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 304 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	60.37	0.00	0.00	0.00
Fountain Solution Concentrate	1.56			
Glycol Ether		0.78	0.25	1.10
Ethylene Glycol		0.39	0.13	0.55
Manual Cleaning Solvent	3.77			
Xylenes		0.02	0.01	0.04
Cumene		0.01	0.01	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	65.97	1.20	0.39	1.70

Total HAPs Applied	1.20 lb/hr	5.24 T/Y
HAP Potential to Emit	**0.39 lb/hr**	**1.70 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	34.21	0.00	0.00	0.00
Fountain Solution Concentrate	0.88			
Glycol Ether		0.44	0.14	0.46
Ethylene Glycol		0.22	0.07	0.23
Manual Cleaning Solvent	2.14			
Xylenes		0.01	0.00	0.02
Cumene		0.01	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	37.37	0.68	0.22	0.72

Total HAPs Applied	0.68 lb/hr	2.20 T/Y
HAP Emissions	**0.22 lb/hr**	**0.72 T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 305 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	42.05	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.17	0.76
Ethylene Glycol		0.27	0.09	0.38
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	46.04	0.83	0.27	1.19
Total HAPs Applied		0.83 lb/hr		3.65 T/Y
HAP Potential to Emit		**0.27 lb/hr**		**1.19 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	23.83	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.10	0.32
Ethylene Glycol		0.15	0.05	0.16
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	26.07	0.47	0.15	0.50
Total HAPs Applied		0.47 lb/hr		1.53 T/Y
HAP Emissions		**0.15 lb/hr**		**0.50 T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Web Offset Press 306 - Heatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	60.37	0.00	0.00	0.00
Fountain Solution Concentrate	1.56			
Glycol Ether		0.78	0.25	1.10
Ethylene Glycol		0.39	0.13	0.55
Manual Cleaning Solvent	3.77			
Xylenes		0.02	0.01	0.04
Cumene		0.01	0.01	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	65.97	1.20	0.39	1.70

Total HAPs Applied	1.20 lb/hr	5.24	T/Y
HAP Potential to Emit	**0.39 lb/hr**	**1.70**	**T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	34.21	0.00	0.00	0.00
Fountain Solution Concentrate	0.88			
Glycol Ether		0.44	0.14	0.46
Ethylene Glycol		0.22	0.07	0.23
Manual Cleaning Solvent	2.14			
Xylenes		0.01	0.00	0.02
Cumene		0.01	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	37.37	0.68	0.22	0.72

Total HAPs Applied	0.68 lb/hr	2.20	T/Y
HAP Emissions	**0.22 lb/hr**	**0.72**	**T/Y**

Attachment 3 - HAP Emissions from Heatset Operations

Combined Web Offset Presses 301-306 - Heatset

Emissions - Maximum

	HAP Applied (#/hr)	HAP Emissions (#/hr)	(T/Y)
Glycol Ether	3.69	1.18	5.18
Ethylene Glycol	1.84	0.59	2.59
Xylenes	0.08	0.04	0.17
Cumene	0.05	0.03	0.12
Total	5.66	1.84	8.06
Total HAPs Applied	5.66 lb/hr		24.80 T/Y
HAP Potential to Emit	**1.84 lb/hr**		**8.06 T/Y**

Emissions - Typical

	HAP Applied (#/hr)	HAP Emissions (#/hr)	(T/Y)
Glycol Ether	2.09	0.67	2.18
Ethylene Glycol	1.04	0.34	1.09
Xylenes	0.04	0.02	0.07
Cumene	0.03	0.02	0.05
Total	3.21	1.04	3.39
Total HAPs Applied	3.21 lb/hr		10.43 T/Y
HAP Emissions	**1.04 lb/hr**		**3.39 T/Y**

VOC Composition Data

Ink	0.0% HAP	
Fountain Solution Concentrate	75.0% HAP	
		50.0% Glycol Ether
		25.0% Ethylene Glycol
Manual Cleaning Solvent	0.74% HAP	
		0.44% Xylenes
		0.30% Cumene
Automatic Cleaning Solvent	0.0% HAP	

Emissions/Retention Data

Ink Oil VOC/HAP	20%	Retention
	100%	Capture
Fountain Solution VOC/HAP	0%	Retention
	70%	Capture
Manual Cleaning Solvent VOC/HAP	50%	Retention
	0%	Capture
Automatic Cleaning Solvent VOC/HAP	0%	Retention
	40%	Capture
Destruction Efficiency of Control Device	97%	

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 301 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	11.56	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.54	2.38
Ethylene Glycol		0.27	0.27	1.19
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	15.55	0.83	0.82	3.61

Total HAPs Applied	0.83 lb/hr	3.65	T/Y
HAP Potential to Emit	**0.82 lb/hr**	**3.61**	**T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	6.55	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.31	1.00
Ethylene Glycol		0.15	0.15	0.50
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	8.79	0.47	0.47	1.52

Total HAPs Applied	0.47 lb/hr	1.53	T/Y
HAP Emissions	**0.47 lb/hr**	**1.52**	**T/Y**

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 302 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	10.66	0.00	0.00	0.00
Fountain Solution Concentrate	1.00			
Glycol Ether		0.50	0.50	2.19
Ethylene Glycol		0.25	0.25	1.10
Manual Cleaning Solvent	2.42			
Xylenes		0.01	0.01	0.02
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	14.36	0.77	0.76	3.33

Total HAPs Applied	0.77	lb/hr	3.37	T/Y
HAP Potential to Emit	**0.76**	**lb/hr**	**3.33**	**T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	6.04	0.00	0.00	0.00
Fountain Solution Concentrate	0.57			
Glycol Ether		0.28	0.28	0.92
Ethylene Glycol		0.14	0.14	0.46
Manual Cleaning Solvent	1.37			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	8.12	0.44	0.43	1.40

Total HAPs Applied	0.44	lb/hr	1.42	T/Y
HAP Emissions	**0.43**	**lb/hr**	**1.40**	**T/Y**

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 303 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	11.56	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.54	2.38
Ethylene Glycol		0.27	0.27	1.19
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	15.55	0.83	0.82	3.61

Total HAPs Applied 0.83 lb/hr 3.65 T/Y

HAP Potential to Emit 0.82 lb/hr 3.61 T/Y

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	6.55	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.31	1.00
Ethylene Glycol		0.15	0.15	0.50
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	8.79	0.47	0.47	1.52

Total HAPs Applied 0.47 lb/hr 1.53 T/Y

HAP Emissions 0.47 lb/hr 1.52 T/Y

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 304 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	16.60	0.00	0.00	0.00
Fountain Solution Concentrate	1.56			
Glycol Ether		0.78	0.78	3.41
Ethylene Glycol		0.39	0.39	1.71
Manual Cleaning Solvent	3.77			
Xylenes		0.02	0.01	0.04
Cumene		0.01	0.01	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	22.21	1.20	1.18	5.18

Total HAPs Applied	1.20 lb/hr	5.24	T/Y
HAP Potential to Emit	**1.18 lb/hr**	**5.18**	**T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	9.41	0.00	0.00	0.00
Fountain Solution Concentrate	0.88			
Glycol Ether		0.44	0.44	1.43
Ethylene Glycol		0.22	0.22	0.72
Manual Cleaning Solvent	2.14			
Xylenes		0.01	0.00	0.02
Cumene		0.01	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	12.57	0.68	0.67	2.18

Total HAPs Applied	0.68 lb/hr	2.20	T/Y
HAP Emissions	**0.67 lb/hr**	**2.18**	**T/Y**

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 305 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	11.56	0.00	0.00	0.00
Fountain Solution Concentrate	1.09			
Glycol Ether		0.54	0.54	2.38
Ethylene Glycol		0.27	0.27	1.19
Manual Cleaning Solvent	2.63			
Xylenes		0.01	0.01	0.03
Cumene		0.01	0.00	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	15.55	0.83	0.82	3.61
Total HAPs Applied		0.83 lb/hr		3.65 T/Y
HAP Potential to Emit		**0.82 lb/hr**		**3.61 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	6.55	0.00	0.00	0.00
Fountain Solution Concentrate	0.62			
Glycol Ether		0.31	0.31	1.00
Ethylene Glycol		0.15	0.15	0.50
Manual Cleaning Solvent	1.49			
Xylenes		0.01	0.00	0.01
Cumene		0.00	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	8.79	0.47	0.47	1.52
Total HAPs Applied		0.47 lb/hr		1.53 T/Y
HAP Emissions		**0.47 lb/hr**		**1.52 T/Y**

Attachment 4 - HAP Emissions from Nonheatset Operations

Web Offset Press 306 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	16.60	0.00	0.00	0.00
Fountain Solution Concentrate	1.56			
Glycol Ether		0.78	0.78	3.41
Ethylene Glycol		0.39	0.39	1.71
Manual Cleaning Solvent	3.77			
Xylenes		0.02	0.01	0.04
Cumene		0.01	0.01	0.02
Automatic Cleaning Solvent	0.28	0.00	0.00	0.00
Total	22.21	1.20	1.18	5.18
Total HAPs Applied		1.20 lb/hr		5.24 T/Y
HAP Potential to Emit		**1.18 lb/hr**		**5.18 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Ink	9.41	0.00	0.00	0.00
Fountain Solution Concentrate	0.88			
Glycol Ether		0.44	0.44	1.43
Ethylene Glycol		0.22	0.22	0.72
Manual Cleaning Solvent	2.14			
Xylenes		0.01	0.00	0.02
Cumene		0.01	0.00	0.01
Automatic Cleaning Solvent	0.14	0.00	0.00	0.00
Total	12.57	0.68	0.67	2.18
Total HAPs Applied		0.68 lb/hr		2.20 T/Y
HAP Emissions		**0.67 lb/hr**		**2.18 T/Y**

Attachment 4 - HAP Emissions from Nonheatset Operations

Combined Web Offset Presses 301-306 - Nonheatset

Materials Used and Emissions - Maximum

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Glycol Ether		3.69	3.69	16.15
Ethylene Glycol		1.84	1.84	8.07
Xylenes		0.08	0.04	0.17
Cumene		0.05	0.03	0.12
Total		5.66	5.60	24.51
Total HAPs Applied		5.66 lb/hr		24.80 T/Y
HAP Potential to Emit		**5.60 lb/hr**		**24.51 T/Y**

Materials Used and Emissions - Typical

	VOC Applied (#/hr)	HAP Applied (#/hr)	HAP Emissions (#/hr)	HAP Emissions (T/Y)
Glycol Ether		2.09	2.09	6.79
Ethylene Glycol		1.04	1.04	3.39
Xylenes		0.04	0.02	0.07
Cumene		0.03	0.02	0.05
Total		3.21	3.17	10.31
Total HAPs Applied		3.21 lb/hr		10.43 T/Y
HAP Emissions		**3.17 lb/hr**		**10.31 T/Y**

VOC Composition Data

Ink	0.0% HAP	
Fountain Solution Concentrate	75.0% HAP	
		50.0% Glycol Ether
		25.0% Ethylene Glycol
Manual Cleaning Solvent	0.74% HAP	
		0.44% Xylenes
		0.30% Cumene
Automatic Cleaning Solvent	0.0% HAP	

Emissions/Retention Data

Ink Oil VOC/HAP	95%	Retention
	5%	Emissions
Fountain Solution VOC/HAP	0%	Retention
	100%	Emissions
Manual Cleaning Solvent VOC/HAP	50%	Retention
	50%	Emissions
Automatic Cleaning Solvent VOC/HAP	0%	Retention
	100%	Emissions

Attachment 5
Combustion Emissions Calculations

Press 301 Dryer

Rated Heat Input = 3.00 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.20 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.022	0.009	0.098	0.029
PM10	0.00745	0.022	0.009	0.098	0.029
SO2	0.00059	0.002	0.001	0.008	0.002
NOx	0.09804	0.294	0.118	1.288	0.382
VOC	0.00539	0.016	0.006	0.071	0.021
CO	0.08235	0.247	0.099	1.082	0.321
Lead	4.902E-07	1.471E-06	5.882E-07	6.441E-06	1.912E-06

Press 302 Dryer

Rated Heat Input = 4.01 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.60 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.030	0.012	0.131	0.039
PM10	0.00745	0.030	0.012	0.131	0.039
SO2	0.00059	0.002	0.001	0.010	0.003
NOx	0.09804	0.393	0.157	1.722	0.511
VOC	0.00539	0.022	0.009	0.095	0.028
CO	0.08235	0.330	0.132	1.446	0.429
Lead	4.902E-07	1.966E-06	7.863E-07	8.610E-06	2.555E-06

Press 303 Dryer

Rated Heat Input = 3.00 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.20 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.022	0.027	0.098	0.087
PM10	0.00745	0.022	0.027	0.098	0.087
SO2	0.00059	0.002	0.002	0.008	0.007
NOx	0.09804	0.294	0.353	1.288	1.147
VOC	0.00539	0.016	0.019	0.071	0.063
CO	0.08235	0.247	0.296	1.082	0.964
Lead	4.902E-07	1.471E-06	5.882E-07	6.441E-06	1.912E-06

Attachment 5
Combustion Emissions Calculations

Press 304 Dryer

Rated Heat Input = 4.27 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.71 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.032	0.054	0.139	0.177
PM10	0.00745	0.032	0.054	0.139	0.177
SO2	0.00059	0.003	0.004	0.011	0.014
NOx	0.09804	0.419	0.715	1.834	2.324
VOC	0.00539	0.023	0.039	0.101	0.128
CO	0.08235	0.352	0.601	1.540	1.952
Lead	4.902E-07	2.093E-06	8.373E-07	9.168E-06	2.721E-06

Press 305 Dryer

Rated Heat Input = 3.00 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.20 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.022	0.009	0.098	0.029
PM10	0.00745	0.022	0.009	0.098	0.029
SO2	0.00059	0.002	0.001	0.008	0.002
NOx	0.09804	0.294	0.118	1.288	0.382
VOC	0.00539	0.016	0.006	0.071	0.021
CO	0.08235	0.247	0.099	1.082	0.321
Lead	4.902E-07	1.471E-06	5.882E-07	6.441E-06	1.912E-06

Press 306 Dryer

Rated Heat Input = 4.27 MMBtu/hr @ 8,670 hrs/yr
Average Heat Input = 1.71 MMBtu/hr @ 6,500 hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.032	0.013	0.139	0.041
PM10	0.00745	0.032	0.013	0.139	0.041
SO2	0.00059	0.003	0.001	0.011	0.003
NOx	0.09804	0.419	0.167	1.834	0.544
VOC	0.00539	0.023	0.009	0.101	0.030
CO	0.08235	0.352	0.141	1.540	0.457
Lead	4.902E-07	2.093E-06	8.373E-07	2.093E-06	2.721E-06

Attachment 5
Combustion Emissions Calculations

RTO-2

Rated Heat Input =	3.00	MMBtu/hr @	8,670	hrs/yr
Average Heat Input =	0.40	MMBtu/hr @	8,670	hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.022	0.003	0.098	0.013
PM10	0.00745	0.022	0.003	0.098	0.013
SO2	0.00059	0.002	0.000	0.008	0.001
NOx	0.09804	0.294	0.039	1.288	0.172
VOC	0.00539	0.016	0.002	0.071	0.009
CO	0.08235	0.247	0.033	1.082	0.144
Lead	4.902E-07	1.471E-06	1.961E-07	6.441E-06	6.373E-07

RTO-3

Rated Heat Input =	3.00	MMBtu/hr @	8,670	hrs/yr
Average Heat Input =	0.40	MMBtu/hr @	8,670	hrs/yr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.022	0.003	0.098	0.013
PM10	0.00745	0.022	0.003	0.098	0.013
SO2	0.00059	0.002	0.000	0.008	0.001
NOx	0.09804	0.294	0.039	1.288	0.172
VOC	0.00539	0.016	0.002	0.071	0.009
CO	0.08235	0.247	0.033	1.082	0.144
Lead	4.902E-07	1.471E-06	1.961E-07	6.441E-06	6.373E-07

Total

Rated Heat Input	27.55	MMBtu/hr
Average Heat Inpu	9.42	MMBtu/hr

Pollutant	Emission Factor[1] (lb/mmbtu)	Maximum Emission Rate (lb/hr)	Average Emission Rate (lb/hr)	Maximum Emissions (tpy)	Average Emissions (tpy)
PM	0.00745	0.205	0.130	0.899	0.428
PM10	0.00745	0.205	0.130	0.899	0.428
SO2	0.00059	0.016	0.010	0.071	0.034
NOx	0.09804	2.701	1.706	11.830	5.634
VOC	0.00539	0.149	0.094	0.651	0.310
CO	0.08235	2.269	1.433	9.937	4.733
Lead	4.902E-07	1.350E-05	4.618E-06	5.208E-05	1.501E-05

[1] AP-42 5th Edition, Volume 1, Chapter 1, Section 1.4, Supplement D, July 1998 (Small Boilers, <100 MMBtu/hr), Tables 1.4-1 and 1.4-2.

Attachment BACT-1
Emissions Summary - Nonheatset

Unit ID	Baseline VOC PTE (TPY)[1]	VOC PTE (TPY)[2]	Typical Emissions (TPY)[3]
Web Offset Press 301 - Nonheatset	29.20	14.25	5.93
Web Offset Press 302 - Nonheatset	27.03	13.23	5.50
Web Offset Press 303 - Nonheatset	29.20	14.25	5.93
Web Offset Press 304 - Nonheatset	41.40	19.93	8.32
Web Offset Press 305 - Nonheatset	29.20	14.25	5.93
Web Offset Press 306 - Nonheatset	41.40	19.93	8.32
Total - 6 Presses	197.44	95.82	39.93
Emissions Reduction from Baseline		**101.62**	**157.51**

[1]Based on 20% VOC in ink, 5% VOC in press-ready fountain solution and 100% VOC, high vapor pressure cleaning solvents (100% evaporation).

[2]Potential to emit as indicated in permit application - lower VOC/vapor pressure materials as used in practice

[3]Typical emissions as indicated in permit application

Attachment BACT-2
Energy Costs per Ton of Destroyed VOC - Nonheatset

Control Technology			
Catalytic	Recuperative	Regenerative	
70	70	70	T1 = Inlet Temperature = Dryer Exhaust Temperature - Assume 70F Nonheatset
21,152	21,152	21,152	Flow (scfm)
65%	76%	94%	Heat Exchanger Effectiveness (See Below)
750	1,400	1500	T3 = Operating Temperature (See Below)
17.81	17.81	17.81	VOC Loading (ton/yr)
4.1	4.1	4.1	VOC Loading (lb/hr)
97%	97%	97%	Destruction Efficiency
512	1,081	1,414	T2
238	319	86	Delta T
5,980,601	8,021,041	2,156,032	Net BTU/hr Required
71,002	71,002	71,002	Net BTU/hr from VOC
6,566,221	8,833,377	2,316,699	Gross BTU/hr
65.7	88.3	23.2	Fuel Usage (therms/hr)
$66.98	$90.10	$23.63	Cost/hr
575,201	**773,804**	**202,943**	**Fuel Usage (therms/yr)**
$586,705	$789,280	$207,002	Annual Gas Cost
47.7	85.8	76.3	BHP
35.6	64.0	56.9	KW
311,458	**560,624**	**498,333**	**Electrical Usage (KWH/yr)**
$1.78	$3.20	$2.84	Cost/hr
$15,573	$28,031	$24,917	Annual Electrical Cost
$602,278	$817,311	$231,918	Total Utilities Cost
17.28	17.28	17.28	Tons VOC Controlled
$34,860	**$47,306**	**$13,423**	**Total Utilities Cost per Ton VOC Controlled**

	Heat Exchanger Effectiveness	Operating Temperature	Pressure Drop (in. w.c.)
Catalytic =	65%	750	10
Recuperative =	76%	1400	18
Regenerative =	94%	1500	16

Basis	8,760 hr/yr
Gas	$1.02 /therm
Electricity	$0.05 /KWH

Attachment BACT-3
Emissions Summary - Heatset

Unit ID	Baseline VOC PTE (TPY)[1]	VOC PTE (TPY)[2]	Typical Emissions (TPY)[3]
Web Offset Press 301 - Heatset	34.51	12.44	5.19
Web Offset Press 302 - Heatset	31.83	11.53	4.81
Web Offset Press 303 - Heatset	34.51	12.44	5.19
Web Offset Press 304 - Heatset	49.49	17.54	7.34
Web Offset Press 305 - Heatset	34.51	12.44	5.19
Web Offset Press 306 - Heatset	49.49	17.54	7.34
Total - 6 Presses	234.34	83.92	35.07
Emissions Reduction from Baseline		**150.43**	**199.28**

[1]Potential to emit as indicated in permit application uncontrolled

[2]Potential to emit as indicated in permit application with control device with 97% Destruction Efficiency

[3]Typical emissions as indicated in permit application

Attachment BACT-4
Energy Costs per Ton of Destroyed VOC - Heatset

Control Technology			
Catalytic	Recuperative	Regenerative	
350	350	350	T1 = Inlet Temperature = Dryer Exhaust Temperature - Assume 350F Heatset
21,152	21,152	21,152	Flow (scfm)
65%	76%	94%	Heat Exchanger Effectiveness (See Below)
750	1,400	1500	T3 = Operating Temperature (See Below)
431.44	431.44	431.44	VOC Loading (ton/yr)
98.5	98.5	98.5	VOC Loading (lb/hr)
97%	97%	97%	Destruction Efficiency
610	1,148	1,431	T2
140	252	69	Delta T
3,518,001	6,332,401	1,733,872	Net BTU/hr Required
1,719,849	1,719,849	1,719,849	Net BTU/hr from VOC
1,997,946	5,125,058	15,581	Gross BTU/hr
20.0	51.3	0.2	Fuel Usage (therms/hr)
$20.38	$52.28	$0.16	Cost/hr @
175,020	**448,955**	**1,365**	**Fuel Usage (therms/yr)**
$178,520	$457,934	$1,392	Annual Gas Cost
72.8	131.1	116.5	BHP
54.3	97.8	86.9	KW
476,002	**856,803**	**761,603**	**Electrical Usage (KWH/yr)**
$2.72	$4.89	$4.35	Cost/hr @
$23,800	$42,840	$38,080	Annual Electrical Cost
$202,321	$500,774	$39,472	Total Utilities Cost
418.50	418.50	418.50	Tons VOC Controlled
$483	**$1,197**	**$94**	**Total Utilities Cost per Ton VOC Controlled**

	Heat Exchanger Effectiveness	Operating Temperature	Pressure Drop (in. w.c.)
Catalytic =	65%	750	10
Recuperative =	76%	1400	18
Regenerative =	94%	1500	16

Basis	8,760 hr/yr
Gas	$1.02 /therm
Electricity	$0.05 /KWH

Figure 1A
Process Flow Diagram
Web Offset Press 301 - Heatset

Usage Rates	Maximum	Typical	
Ink	105.1	59.6	lb/hr
Fountain Solution	9.2	5.2	lb/hr
Manual Blanket Wash	2.6	1.5	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	42.0	23.8	lb/hr
Fountain Solution VOC	1.1	0.6	lb/hr
Manual Blanket Wash VOC	2.6	1.5	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	2.84	1.60	lb/hr
	12.44	5.19	TPY

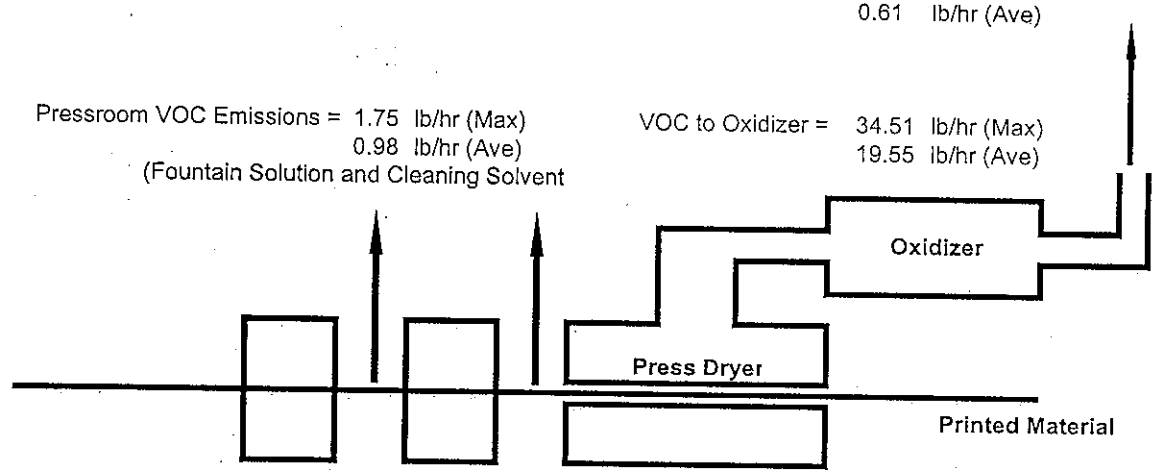


Figure 1B
Process Flow Diagram
Web Offset Press 302 - Heatset

Usage Rates	Maximum	Typical	
Ink	96.9	54.9	lb/hr
Fountain Solution	8.5	4.8	lb/hr
Manual Blanket Wash	2.4	1.4	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	38.8	22.0	lb/hr
Fountain Solution VOC	1.0	0.6	lb/hr
Manual Blanket Wash VOC	2.4	1.4	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	2.63	1.48	lb/hr
	11.53	4.81	TPY

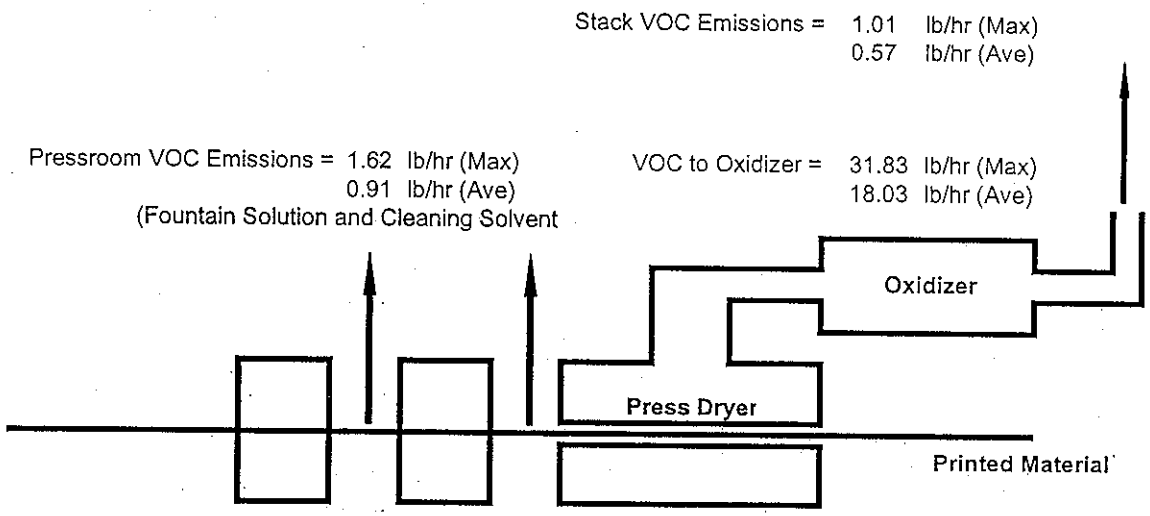


Figure 1C
Process Flow Diagram
Web Offset Press 303 - Heatset

Usage Rates	Maximum	Typical	
Ink	105.1	59.6	lb/hr
Fountain Solution	9.2	5.2	lb/hr
Manual Blanket Wash	2.6	1.5	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	42.0	23.8	lb/hr
Fountain Solution VOC	1.1	0.6	lb/hr
Manual Blanket Wash VOC	2.6	1.5	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	2.84	1.60	lb/hr
	12.44	5.19	TPY

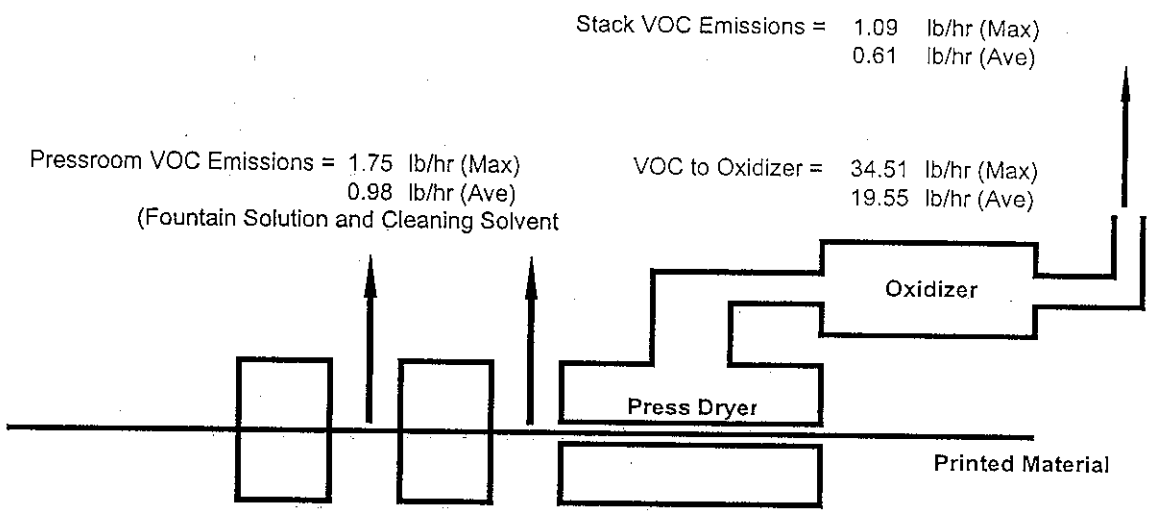


Figure 1D
Process Flow Diagram
Web Offset Press 304 - Heatset

Usage Rates	Maximum	Typical	
Ink	150.9	85.5	lb/hr
Fountain Solution	13.2	7.5	lb/hr
Manual Blanket Wash	3.8	2.1	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	60.4	34.2	lb/hr
Fountain Solution VOC	1.6	0.9	lb/hr
Manual Blanket Wash VOC	3.8	2.1	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	4.00	2.26	lb/hr
	17.54	7.34	TPY

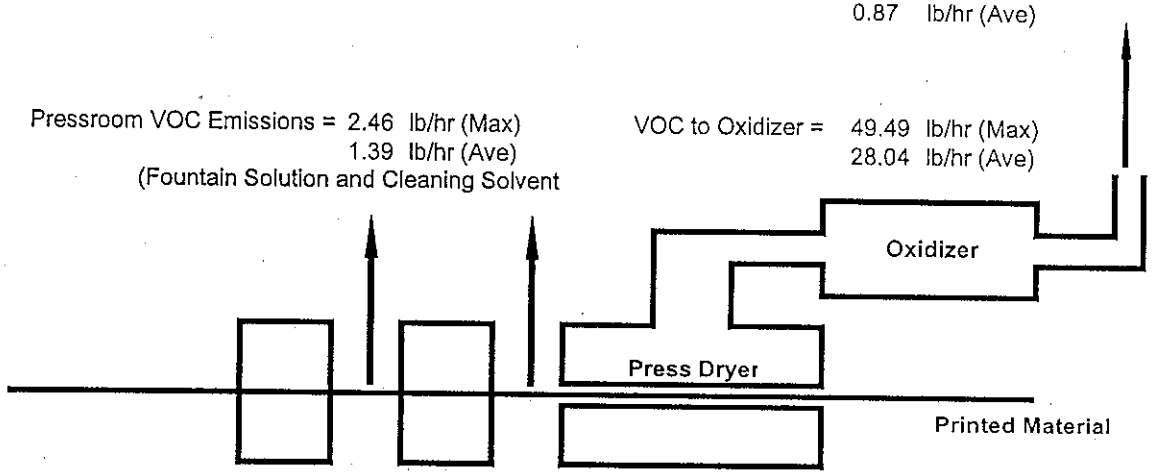


Figure 1E
Process Flow Diagram
Web Offset Press 305 - Heatset

Usage Rates	Maximum	Typical	
Ink	105.1	59.6	lb/hr
Fountain Solution	9.2	5.2	lb/hr
Manual Blanket Wash	2.6	1.5	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	42.0	23.8	lb/hr
Fountain Solution VOC	1.1	0.6	lb/hr
Manual Blanket Wash VOC	2.6	1.5	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	2.84	1.60	lb/hr
	12.44	5.19	TPY

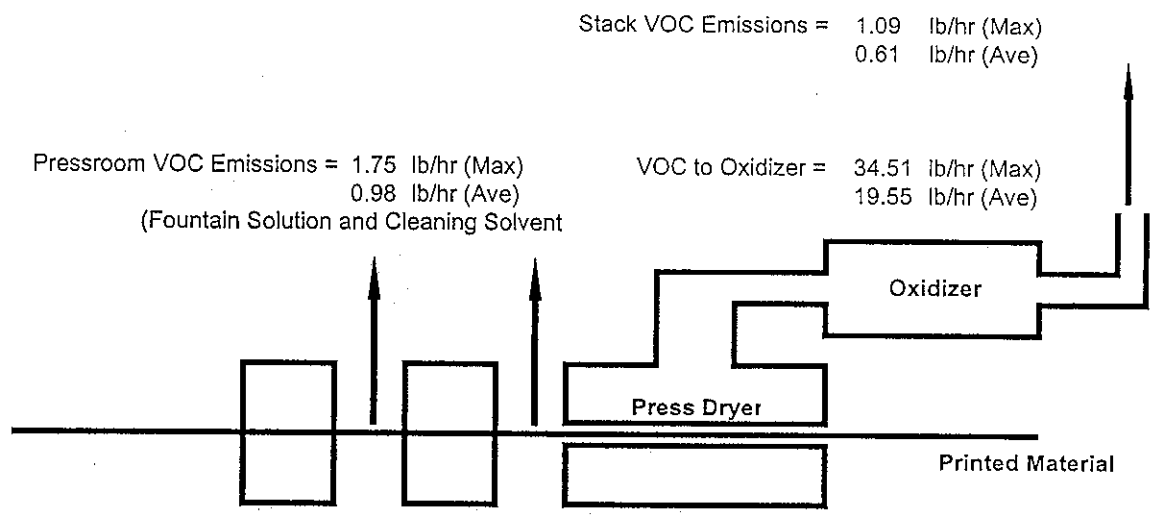
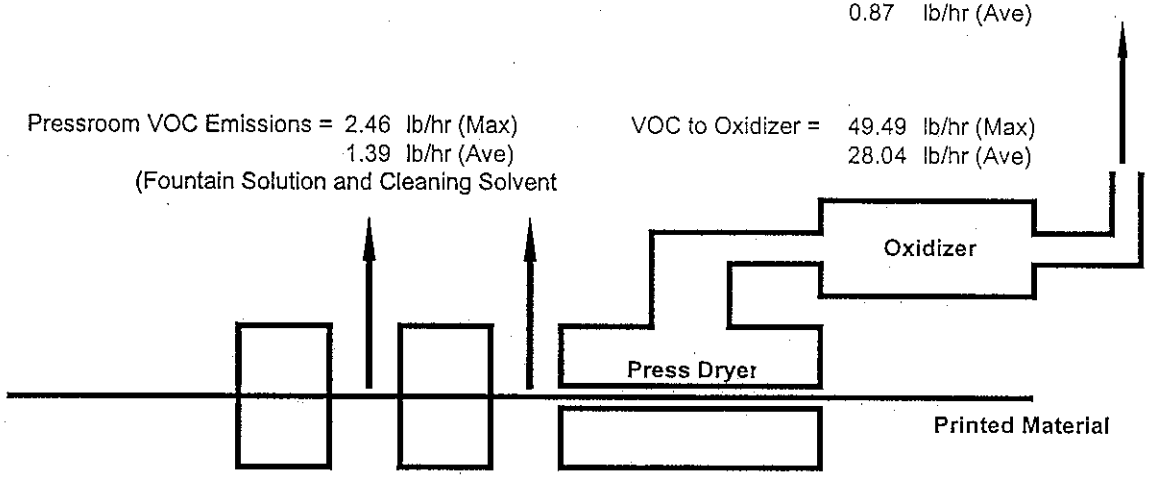


Figure 1F
Process Flow Diagram
Web Offset Press 306 - Heatset

Usage Rates	Maximum	Typical	
Ink	150.9	85.5	lb/hr
Fountain Solution	13.2	7.5	lb/hr
Manual Blanket Wash	3.8	2.1	lb/hr
Automatic Blanket Wash	0.9	0.4	lb/hr
Ink VOC	60.4	34.2	lb/hr
Fountain Solution VOC	1.6	0.9	lb/hr
Manual Blanket Wash VOC	3.8	2.1	lb/hr
Automatic Blanket Wash VOC	0.3	0.1	lb/hr
VOC Emissions	4.00	2.26	lb/hr
	17.54	7.34	TPY