217/782-2113

CONSTRUCTION PERMIT -- PSD APPROVAL

PERMITTEE

Quebecor World - Effingham Division
Attn: Paul McDaniels, Plant Manager
2701 South Banker
Effingham, Illinois 62401

Application No.: 00050070
Applicant's Designation: PRESSREV
Subject: Presses 225, 230 and 232
Date Issued: September 6, 2000
Location: 2701 South Banker, Effingham

I.D. No.: 049025AAT
Date Received: May 10, 2000

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of three heatset web offset lithographic printing lines (225, 230, 232) controlled by a thermal oxidizer as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

In conjunction with this permit, approval is given with respect to the federal rules for Prevention of Significant Deterioration of Air Quality Regulations (PSD) for the above referenced equipment as described in the application, in that the Illinois Environmental Protection Agency (Illinois EPA) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the findings and conditions which follow:

## Findings

1. Quebecor World plans to expand its lithographic printing plant in Effingham. The expansion involves construction of three heatset web offset lithographic printing lines controlled by a thermal oxidizer.

2. The area in which the project is to be located is designated as attainment for all criteria pollutants.

3. The proposed project has potential emissions which are more than 40 tons/year for volatile organic compounds (VOC). The project is

therefore subject to PSD review as a major modification for VOC emissions.

4. The project must be designed, constructed and operated so that emissions are in compliance with (i) all applicable Board emission limits, (ii) Best Available Control Technology (BACT) on emissions of VOC and (iii) applicable Federal New Source Performance Standards (NSPS). The application submitted by Quebecor World, as reviewed by the Illinois EPA shows that the project will comply with these requirements.

5. The air quality analysis submitted by Quebecor World and reviewed by the Illinois EPA shows that the project will not cause a violation of the national ambient air quality standards (NAAQS) and increments.

6. The Illinois EPA has determined that the application for the proposed project complies with all applicable Illinois Air Pollution Control Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.

7. A copy of the application and the Illinois EPA's review of the application and a draft of this permit was forwarded to a location in the vicinity of the plant, and the public was given notice and opportunity to examine this material, to submit comments, and to request and participate in a public hearing on this matter.

## Conditions

1.0 Unit Specific Conditions

1.1 Unit: Three Heatset Web Offset Lithographic Printing Lines
Control: Thermal Oxidizer

1.1.1 Description

The source is adding three new heatset web offset lithographic printing presses each equipped with natural gas-fired dryers. The presses will be controlled by a thermal oxidizer.

1.1.2 List of Emission Units and Pollution Control Equipment

| Emission Unit | Description | Emission Control Equipment |
|---|---|---|
| Press No. 225 | Heidelberg Harris M-1000A Heatset Web Offset Lithographic Printing Press With Dryer | Thermal Oxidizer |
| Press No. 230 | Heidelberg Harris M-1000B Heatset Web Offset Lithographic Printing Press With Dryer | Thermal Oxidizer |

| | | |
|---|---|---|
| Press No. 232 | 48-page Heatset Web Offset Lithographic Printing Press With Dryer | Thermal Oxidizer |

1.1.3 Applicability Provisions and Applicable Regulations

a. An Aaffected printing line@ for the purpose of these unit-specific conditions, is each lithographic printing line as described in Conditions 1.1.1 and 1.1.2.

b. The affected printing lines are subject to 35 IAC 212.321(a), which provides that the Permittee shall not cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 [35 IAC 212.321(a)].

c. The as-applied fountain solution used on the affected printing lines shall contain no more than eight (8) percent, by weight, of volatile organic material, pursuant to 35 IAC 215.408(b).

d. The Permittee shall not cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm [35 IAC 214.301].

1.1.4 Non-Applicability of Regulations of Concern

a. The affected printing lines are not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Printing and Publishing Industry, 40 CFR 9 and 63, Subparts A and KK, because the affected printing lines are not publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses.

b. The affected printing lines are not subject to 35 IAC 216.121, Emissions of Carbon Monoxide from Fuel Combustion Emission Units, because the affected printing lines are not by definition fuel combustion emission units.

c. The affected printing lines are not subject to 35 IAC 215.204(c), Coating Operations/Paper Coating, as the

paper coating limitation does not apply to equipment used for both printing and paper coating [35 IAC 215.204(c)].

1.1.5 Control Requirements

a. i. The dryers of the affected printing lines shall be controlled by thermal oxidizers which shall be operated at all times when the affected printing lines are in operation.

ii. The air pressure in the dryers shall be maintained lower than the air pressure of the press room, such that air flow through all openings in the dryer, other than the exhaust, is into the dryers at all times when the affected printing lines are operating.

iii. The thermal oxidizer controlling the affected printing lines shall achieve at least 97% destruction efficiency.

iv. The thermal oxidizer combustion chamber shall be preheated to at least the manufacturer's recommended temperature but no less than the temperature at which compliance with Condition 1.1.5(a)(iii) was demonstrated in the most recent compliance test, before the printing process is begun, and this temperature shall be maintained during operation of the affected printing line.

b. Fountain solution for the affected printing lines shall contain no alcohol and shall have a VOC content, by volume, as applied, less than or equal to 0.5%.

c. i. Cleaning solution for the affected printing lines as used shall contain no alcohol and shall have a VOM composite partial vapor pressure at 20EC of no more than 5 mmHg (0.09 psia at 68°F) or shall contain no more than 30% VOM by weight and have a VOM composite partial vapor pressure of no more than 10 mmHg at 20°C (0.19 psia at 68°F).

ii. All VOM containing cleaning materials (including rags associated with the affected printing lines) must be kept, stored, and disposed of in closed containers.

d. Natural gas shall be the only fuel used with the affected printing lines and associated thermal oxidizer.

Condition 1.1.5 represents the application of Best Available Control Technology (BACT) for emissions of VOC.

1.1.6 Emission Limitations

The affected printing lines are subject to the following:

a. Emissions of volatile organic compounds from the affected printing lines associated with use of inks, fountain solution and cleanup solution shall not exceed 91.1 tons per year. This limit is based on the maximum material usage, the minimum control requirements specified in Condition 1.1.5 and emission factors and formulas in Condition 2.1.12.

b. Emissions from the dryers of affected printing lines attributable to combustion of fuel shall not exceed the following limits:

| | Emissions | |
|---|---|---|
| Pollutant | (Lb/Hour) | (Tons/Year) |
| $NO_x$ | 3.96 | 17.34 |
| CO | 3.33 | 14.56 |
| VOM | 0.22 | 0.96 |
| PM | 0.31 | 1.32 |
| $SO_2$ | 0.03 | 0.10 |

These limits are based on the maximum firing rate of the dryers and the maximum hours of operation (8,760 hours/year).

c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

1.1.7 Testing Requirements

a. i. Within 180 days of initial startup of the last press installed, the Permittee shall determine the destruction efficiency of the thermal oxidizer for volatile organic compound emissions, measured during conditions which are representative of maximum emissions.

ii. Emission testing shall also be conducted upon a reasonable request by the Illinois EPA, pursuant to 35 IAC 215.410(b).

b. The methods and procedures of 35 IAC 218.105(d) and (f) shall be used for testing to demonstrate compliance with the requirements of this permit, as follows:

i. To select the sampling sites, Method 1 or 1A, as appropriate, 40 CFR 60, Appendix A. The sampling sites for determining efficiency in reducing VOC from the dryer exhaust shall be located between the dryer exhaust and the control device inlet, and between the outlet of the control device and the exhaust to the atmosphere;

ii. To determine the volumetric flow rate of the exhaust stream, Method 2, 2A, 2C, or 2D, as appropriate, 40 CFR 60, Appendix A;

iii. To determine the VOC concentration of the exhaust stream entering and exiting the control device, Method 25 or 25A, as appropriate, 40 CFR 60, Appendix A. For thermal and catalytic afterburners, Method 25 must be used except under the following circumstances, in which case Method 25A must be used:

A. The allowable outlet concentration of VOC from the control device is less than 50 ppmv, as carbon;

B. The VOC concentration at the inlet of the control device and the required level of control result in exhaust concentrations of VOC of 50 ppmv, or less, as carbon; and

C. Due to the high efficiency of the control device, the anticipated VOC concentration at the control device exhaust is 50 ppmv or less, as carbon, regardless of inlet concentration. If the source elects to use Method 25A under this option, the exhaust VOC concentration must be 50 ppmv or less, as carbon, and the required destruction efficiency must be met for the

source to have demonstrated compliance. If the Method 25A test results show that the required destruction efficiency apparently has been met, but the exhaust concentration is above 50 ppmv, as carbon, a retest is required. The retest shall be conducted using either Method 25 or Method 25A. If the retest is conducted using Method 25A and the test results again show that the required destruction efficiency apparently has been met, but the exhaust concentration is above 50 ppmv, as carbon, the source must retest using Method 25;

iv. Notwithstanding the criteria or requirements in Method 25 which specifies a minimum probe temperature of 129E C (265E F), the probe must be heated to at least the gas stream temperature of the dryer exhaust, typically close to 176.7E C (350E F);

v. During testing, the printing line(s) shall be operated at representative operating conditions and flow rates; and

vi. During testing, an air flow direction indicating device, such as a smoke stick, shall be used to demonstrate 100 percent emissions capture efficiency for the dryer.

c. Testing to demonstrate compliance with the VOC content limitations in this permit, and to determine the VOC content of fountain solutions, fountain solution additives, cleaning solvents, cleaning solutions, and inks, shall be conducted, as follows:

i. The applicable test methods and procedures specified in 35 IAC 218.105(a) shall be used; provided, however, Method 24 shall be used to demonstrate compliance; or

ii. The manufacturer's specifications for VOC content for fountain solution additives, cleaning solvents, and inks may be used if such manufacturer's specifications are based on results of tests of the VOC content conducted in accordance with methods specified in 35 IAC 218.105(a); provided, however, Method 24 shall be used to determine compliance.

d. Testing to determine the VOC composite partial vapor pressure of cleaning solvents, cleaning solvent concentrates, and as-used cleaning solutions shall be conducted in accordance with the applicable methods and procedures specified in 35 IAC 218.110.

e. A person planning to conduct a volatile organic material emissions test to demonstrate compliance with 35 IAC Part 215, Subpart P: Printing and Publishing, shall notify the Illinois EPA of that intent not less than 60 days before the planned initiation of the tests so the Agency may observe the test [35 IAC 215.410(c)].

1.1.8 Monitoring Requirements

The Permittee shall perform the following monitoring requirements:

a. Fountain Solution VOC Content.

i. For a fountain solution to which VOC is not added automatically:

A. Maintain records of the VOC content of the fountain solution in accordance with condition 1.1.9.

ii. For fountain solutions to which VOC is added at the source with automatic feed equipment, determine the VOM content of the as-applied fountain solution based on the setting of the automatic feed equipment which makes additions of VOC up to a pre-set level. The equipment used to make automatic additions must be installed, calibrated, operated and maintained in accordance with manufacturer's specifications.

b. Thermal Oxidizer:

i. Install, calibrate, maintain, and operate temperature monitoring device(s) with an accuracy of 3EC or 5EF on the thermal oxidizer in accordance with the manufacturer's specifications. Monitoring shall be performed at all times when the afterburner is operating; and

ii. Install, calibrate, operate and maintain, in accordance with manufacturer's specifications, a continuous recorder on the temperature monitoring device(s), such as a strip chart, recorder or computer, with at least the same accuracy as the temperature monitor.

c. Cleaning Solution:

i. The Permittee shall keep records for such cleaning solutions used on any such line(s) as set forth in condition 1.1.9.

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected printing lines to demonstrate compliance with Conditions 1.1.3, 1.1.5 and 1.1.6:

a. For each batch of cleaning solution:

i. The name and identification of each cleaning solution;

ii. Date and time of preparation, and each subsequent modification, of the batch;

iii. The molecular weight, density, and VOC composite partial vapor pressure of each cleaning solvent;

iv. The total amount of each cleaning solvent used to prepare the as-used cleaning solution;

v. The VOC composite partial vapor pressure of each as-used cleaning solution;

vi. Cleaning solvent VOC content (weight percent); and

vii. Cleaning solvent usage (tons/month and tons/year).

b. The date, time and duration of scheduled inspections performed to confirm the proper use of closed containers to control VOC emissions, and any instances of improper use of closed containers, with descriptions of actual practice and corrective action taken, if any;

c. For the thermal oxidizer:

i. Thermal oxidizer monitoring data;

ii. A log of operating time for the thermal oxidizer, monitoring equipment, and the associated printing line;

iii. A maintenance log for the thermal oxidizer and monitoring equipment detailing all routine and non-routine maintenance performed, including dates and duration of any outages; and

iv. A log detailing checks on the air flow direction or air pressure of the dryers and press rooms to insure compliance with the requirements of Condition 1.1.5 at least once per week while the lines are operating.

d. For the fountain solution:

i. The name and identification of each batch of fountain solution prepared for use on one or more lithographic printing lines, the lithographic printing line(s) or centralized reservoir using such batch of fountain solution, and the applicable VOC content limitation for the batch;

ii. For each batch of as-applied fountain solution:

A. Date and time of preparation and each subsequent modification of the batch;

B. Volume and VOC content of each component used in, or subsequently added to, the fountain solution batch;

C. Calculated VOC content of the as-applied fountain solution (volume percent and weight percent); and

D. Fountain Solution usage as-applied (tons/month and tons/year).

e. For the ink:

Ink usage (tons/month and tons/year) and ink VOC content (weight percent).

f. The aggregate monthly and annual VOC emissions from the affected printing lines (tons/month and tons/year).

1.1.10 Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA, Compliance Section of noncompliance of the affected printing lines with the permit requirements. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

b. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Compliance Section of the Division of Air Pollution Control for review. This plan shall describe the specific procedures for testing, including as a minimum:

i. The person(s) who will be performing sampling and analysis and their experience with similar tests.

ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations.

iv. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods.

v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

vi. Any proposed use of an alternative test method, with detailed justification.

vii. The format and content of the Source Test Report.

c. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized. The Final Report shall include as a minimum:

i. A summary of results

ii. General information

iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule

iv. Detailed description of test conditions, including

A. Process information, i.e., mode(s) of operation, process rate, e.g. fuel or raw material consumption

B. Control equipment information, i.e., equipment condition and operating parameters during testing, and

C. A discussion of any preparatory actions taken, i.e., inspections, maintenance and repair

v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration

vi. An explanation of any discrepancies among individual tests or anomalous data

d. Two (2) copies of required reports and notifications concerning equipment operation or repairs, performance testing or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
2009 Mall Street
Collinsville, Illinois 62234

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

1.1.12 Compliance Procedures

Compliance with the emission limits in Condition 1.1.6 shall be based on the recordkeeping requirements in Condition 1.1.9 and the emission factors and formulas listed below:

a. To determine compliance with Condition 1.1.6(a), emissions from the affected printing lines shall be calculated based on the following:

Ink VOC Emissions ($E_I$):

$$E_I = (M_I W_I/100)(1-R_I/100)[1-(K/100)(J_I/100)]$$

Fountain Solution VOC Emissions ($E_F$):

$$E_F = (M_F W_F/100)[1-(K/100)(J_F/100)]+ (M_F W_F/100)[1-(J_F/100)]$$

Manual Cleaning Solvent VOC Emissions ($E_M$):

$$E_M = (M_M W_M/100)(1-R_M/100)$$

Automatic Cleaning Solvent VOC Emissions ($E_A$):

$$E_M = (M_M W_M/100)[1-(K/100)(J_F/100)]+ (M_M W_M/100)[(1-(J_F/100)]$$

Total VOM Emissions ($E_T$):

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

Where:

$M_I$ = Weight of ink used (pounds);

$W_I$ = Weight percent VOC in ink (wt. %);

$R_I$ = Percent of ink VOC retained in printed product (20%);

K = Control efficiency of thermal oxidizer* (97%);

$J_I$ = Capture efficiency of dryer and control system for ink VOC (100%);

$M_F$ = Weight of fountain solution used, as applied (pounds);

$W_F$ = Weigh percent VOC in fountain solution, as applied (weight percent);

$J_F$ = Capture efficiency of dryer and control system for fountain solution VOC (70%);

$M_M$ = Weight of manual cleaning solvent used (pounds);

$W_M$ = Weight percent VOC in manual cleaning solvent (weight percent);

$R_M$ = Percent of manual cleaning solvent VOC retained in wipers (50%);

$M_A$ = Weight of automatic cleaning solvent used (pounds);

$W_A$ = Weight percent VOC in automatic cleaning solvent (weight percent);

$J_A$ = Capture efficiency of dryer and control system for automatic cleaning solution VOC (40%);

*As specified by testing pursuant to Condition 1.1.7.

b. Compliance with Condition 1.1.3(d) is assured by the work-practices inherent in operation of a natural gas-fired press dryers and thermal oxidizer.

c. Compliance with the emission limits in condition 1.1.6(b) is assured because the dryer emission limits are based on the maximum capacity of the emission unit. As a result, no compliance procedures are set in this permit addressing these requirements.

2a. Each affected printing line may be operated for a period of 180 days under this Construction Permit, to allow for equipment shakedown and emission testing.

b. Upon successful completion of emission testing demonstrating compliance with applicable limitations, the Permittee may continue to operate the

affected printing lines as allowed by Section 39.5(5) of the Environmental Protection Act.

3. Each affected printing line shall not begin operation until construction, including construction of any air pollution control equipment, is complete, and reasonable measures short of actual operation have been taken to verify proper operation.

If you have any questions on this permit, please call Jason Schnepp at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JMS:psj

cc: Region 3