

PERMIT TO CONSTRUCT EVALUATION
Lithographic Printing Press, RTO (new construction)

Applicant's Name: Quebecor World Great Western Publishing
Company ID No.: 132368
Mailing Address: 6688 Box Springs Blvd., Riverside, CA 92507
Equipment Address: 6688 Box Springs Blvd., Riverside, CA 92507

EQUIPMENT DESCRIPTION:

Application 466987 (replacing A/Ns 401090-1):

LITHOGRAPHIC PRINTING SYSTEM NO. 707., CONSISTING OF:

1. LITHOGRAPHIC PRINTING PRESS, GOSS, MODEL NO. C-700, WEB-FED, 4 X 4 COLOR, 35" WIDTH, 400 HP TOTAL.
2. OVEN, MEGTEC, MODEL NO. THERMO FOIL ATLAS 3806E X 72, 34'-8" L. X 7'-3" W. X 8'-0" H., WITH TWO 3,230,000 BTU PER HOUR NATURAL GAS FIRED MAXON EB3MRV LOW NO_x BURNERS, WITH TWO 10 HP COMBUSTION AIR BLOWERS, TWO 100-HP RECIRCULATION FANS, AND ONE 10-HP EXHAUST FAN.
3. CHILL ROLL UNIT.

Application 466988:

MODIFICATION TO AIR POLLUTION CONTROL SYSTEM NO.1 (PERMIT NO. F68629), CONSISTING OF:

1. THERMAL OXIDIZER, REGENERATIVE TYPE, ADVANTAGE ENERGY GROUP, MODEL PREMIER-30, 63'-0" L. X 24'-0" W. X 12'-0" H., 30,000 SCFM CAPACITY, WITH AN 8.6 MMBTU/HR BURNER, A 4.5 MMBTU/HR GAS INJECTION SYSTEM, TWO CERAMIC BEDS (19'-0" L. X 10'-0" W. X 4'-0" H. EACH), A 20 HP COMBUSTION BLOWER AND A COIL MEDIA HEAT EXCHANGER.
2. EXHAUST SYSTEM WITH A 34'-0" HIGH STACK AND ONE 200 HP FAN VENTING EIGHT LITHOGRAPHIC PRINTING OVENS.

BY THE ADDITION OF:

3. THERMAL OXIDIZER, REGENERATIVE TYPE, LANGBEIN & ENGELBRACHT AMERICA, MODEL NO. TR1595C, SERIAL NO. 1062-06, 16'-4" W. X 40'-6" L. X 17'-9" H., 15,000 SCFM CAPACITY, WITH TWO 8'-8" W. X 8'-8" L. X 5'-0" H. CERAMIC BEDS, ONE 3,000,000 MAXON KINEMAX 3-KM BURNER, AND ONE 1.2 HP COMBUSTION BLOWER.
4. EXHAUST SYSTEM WITH A 30'-0" H. EXHAUST STACK AND ONE 150 HP EXHAUST FAN VENTING SEVEN LITHOGRAPHIC PRINTING OVENS.

Application 468537:

TITLE V REVISION

HISTORY:

The company submitted Application Nos. 466987-8 on 3/9/06 for Permits to Construct a lithographic printing press and a regenerative thermal oxidizer. The company is a Title V facility (Non-RECLAIM). A/N 468537 was submitted on 4/26/07 for the Title V revision. The company is located in an industrial area. There have

been no recent complaints filed against the facility within the past 3 years. During their last inspection in September 2006, the company received a notice to comply to provide their VOC records and Title V reports.

PROCESS DESCRIPTION:

The facility is a large lithographic printing business that prints various inserts, publications, magazines and books. The company has been operating eight lithographic printing presses. The inks are all oil based which are heat set and the presses are all equipped with natural gas fired dryers. The drying ovens are vented to a regenerative thermal oxidizer. The company is proposing to remove the two presses under Permit Nos. F68628 and F68187 (press numbers 1 and 2, respectively) and replacing them with the new Goss press under Application No. 466987. The company is also proposing to add a new RTO to operate in tandem with the existing RTO. The new APC will be manifolded to the existing system and will also vent all of the presses. The retention factor for heatset inks is 20%, so 80% of VOC emissions from the inks will be vented from the dryers to the APC. The equipment will be operated for 52 wks/yr, 7 days/week, 24 hr/day.

The new RTO has a maximum exhaust rate of 15,000 scfm. The oven of the new press is expected to collect 99.5% of the VOC emissions, like the previous evaluations and source tests for the press ovens. The VOC destruction efficiency of the RTO is expected to be 99% (overall efficiency of 98.5%). The RTO will be maintained at a temperature of 1550°F. The retention time of the exhaust in the combustion chamber will be over 7 seconds.

EMISSION CALCULATIONS:

The facility currently operates under facility wide limits for both NOx and VOC. The VOC limit is 7800 lb VOC per month, and the NOx limit is 667 lb NOx per month. The company's current emissions are summarized in the table below:

Application No.	Equipment	NSR 30-Day emissions				
		VOC	NOx	SOx	CO	PM10
401090	Press #1	260	0	0	0	0
401091	Press #2	0	0	0	1	0
401093	Press #3	0	0	0	5	1
410401	Press #4A	0	0	0	3	0
410995	Press #4B	0	0	0	2	0
401095	Press #5	0	0	0	5	1
401096	Press #6	0	0	0	5	1
401097	Press #7	0	0	0	5	1
416582	Therm. Ox. #1	0	22	0	0	0
Total		260	22	0	26	4

Since the facility's VOC emissions are bubbled under A/N 401090, these emissions will be transferred to A/N 466987 since it is replacing A/N 401090. Also, NOx emissions are bubbled under A/N 416582, which is being modified under A/N 466988. Therefore, for NSR data entry purposes the VOC emissions for A/N 466987, and NOx emissions for 466988, will be entered as follows:

VOC Emissions

$$R2 = 7800 \text{ lb VOC/month} = 260 \text{ lb VOC/day} = 10.83 \text{ lb VOC/hr} = 93,600 \text{ lb VOC/yr.}, \quad R1_{hr} = 10.83/(1-98.5) = 722 \text{ lb/hr}$$

NOX Emissions

$$R1 = 667 \text{ lb NOx/month} = 22.2 \text{ lb NOx/day} = 0.926 \text{ lb NOx/hr} = 8,000 \text{ lb NOx/yr.}, \quad R2 = R1$$

Based on manufacturer data for the Press Drying Oven and the RTO, the combustion exhaust concentration data was provided for NOx and CO emissions. For the RTO, 3.9 ppmv NOx and 10 ppmv CO are expected at 10% O₂. However the existing limit of 78 ppm NOx @ 3% O₂ will be used. For the Press Dryer burners, 25 ppm NOx and 100 ppm CO at 3% O₂ are expected. Using the NOx Emission Factor calculation from Rule 2012, yields emission factors in the table below:

$$\text{NOx EF(lb/mmcf)} = \text{ppm} \cdot \left[\frac{20.9}{20.9 - b} \right] \cdot 1.195 \times 10^{-7} \cdot F_d \cdot V$$

where

b = standard O₂ concentration (3% for Press Low Nox burners, 10% for RTO)

F_d = Dry F - factor (Natural Gas = 8710 dscf/MMBTU)

V = Higher heating value (1050 MMBTU/mmcf)

The emission factors for VOC, PM10 and SOx were obtained from AQMD's Emission Fee Billing guidelines. PM10 emissions will be assumed equal to PM emissions.

Emission Factors

Equipment	VOC	NOx	SOx	CO	PM	PM10
Press Dryer	7.0 lb/mmcf	30 ppmv 38.5 lb/mmcf	0.6 lb/mmcf	100 ppmv 78.8 lb/mmcf	7.6 lb/mmcf	7.6 lb/mmcf
RTO	7.0 lb/mmcf	78 ppmv 100 lb/mmcf	0.6 lb/mmcf	35 lb/mmcf	7.6 lb/mmcf	7.6 lb/mmcf

The Printing Press Dryer burners have a combined fuel usage rate of 6152 cubic feet of natural gas per hour. The RTO has a fuel usage rate of 2857 cubic feet per hour. Using the emission factors in the table above, these fuel usage rates yield the following emissions:

Maximum Emissions

Equipment	VOC*	NOx*	SOx	CO	PM	PM10
Press Dryer	0.043 lb/hr	0.237 lb/hr	0.004 lb/hr	0.485 lb/hr	0.047 lb/hr	0.047 lb/hr
RTO	0.02 lb/hr	0.286 lb/hr	0.002 lb/hr	0.1 lb/hr	0.022 lb/hr	0.022 lb/hr

*-Included under facility bubble

Based on the NOx facility limit of 667 lb/month, the maximum natural gas usage would be:

$$\text{Press Dryer : } 667 \frac{\text{lb NOx}}{\text{mo.}} \div 38.5 \frac{\text{lbNOx}}{\text{mmscf}} = 17.32 \frac{\text{mmscf}}{\text{month}} = 0.58 \frac{\text{mmscf}}{\text{day}} = 0.024 \frac{\text{mmscf}}{\text{hr}} > 0.006 \frac{\text{mmscf}}{\text{hr}}$$

$$\text{RTO : } 667 \frac{\text{lb NOx}}{\text{mo.}} \div 100 \frac{\text{lbNOx}}{\text{mmscf}} = 6.67 \frac{\text{mmscf}}{\text{month}} = 0.22 \frac{\text{mmscf}}{\text{day}} = 0.0093 \frac{\text{mmscf}}{\text{hr}} > 0.002857 \frac{\text{mmscf}}{\text{hr}}$$

However, since the maximum possible RTO and Press Dryer NOx emissions from the maximum burner ratings are less than those allowed under the NOx facility limit, the maximum calculated emissions in the table above will be the actual emissions, rather than be limited by the facility limit..

RTO Calculations

Maximum Process Exhaust = 15,000 cfm

Retention Time = 0.89 sec > 0.3 sec.

Burner Capacity:

Chamber Temperature(Tc): 1550°F

Emission Stream Temperature(Te): 70°F

Heat Exchanger Temperature,(T_{he}) (90% assumed efficiency) = (% efficiency) (Tc)+ (1- % eff.)(Te)
 =0.9(1550)+0.1(70) = 1402°F

Enthalpy of Air @ 1550°F= 29.31 BTU/scf (linearly interpolated from Table D4, Appendix D, AP 40)

Enthalpy of Air @ 1402°F= 26.17 BTU/scf (linearly interpolated from Table D4, Appendix D, AP 40)

Net Enthalpy = 29.31-26.17= 3.14 BTU/scf

Assuming the flow rate at start-up is 50% of maximum capacity

Net Heat (Q_{net})= 7500 scfm (60min/hr)(3.14 BTU/scf)=1,413,000 BTU/hr

From Appendix C, Table C1, AP 40 the hypothetical available heat from gas stream @1550°F with 50% primary air through burner (worst case)= (Qa) = 780.5 BTU/scf

Assuming heat loss is 10% the total heat required for the start-up of the process is :

Q_{total} = Qnet x (1+ %heat loss)x(1050 BTU/scf) (1/Qa)= 2,090,986.5 BTU/hr.

Since the burner capacity is greater than Q_{total}, sufficient heat will be available at startup.

Heat from VOC:

Assume the VOCs collected are 100% alcohol.

Lower range of heating values for alcohols is 10,000 BTU/lb.

If a R_{1,VOC, max}= 722 lb/hr, then the heat from the combustion of the alcohol is 7,220,000 BTU/hr.

RULES/REGULATION EVALUATION:

RULE 212, PUBLIC NOTIFICATION

PARAGRAPH 212(c)(1):

This paragraph requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. According to the MSN Yellow Pages, there is no school within the 1,000 feet of the permit unit. Therefore, a public notice will not be required by this paragraph.

PARAGRAPH 212(c)(2):

This section requires a public notice for all new or modified facilities that have on-site emission increases exceeding any of the daily maximums as specified by Rule 212(g).

The proposed project will result in an emission increase for the entire facility. A Rule 212(c)(2) notice will not be triggered since the emission increase is below the daily maximum specified in Rule 212(g). The emissions for the new press and RTO are summarized below:

Pollutant	Emission Increases Oven (lb/day)	Emission Increases RTO (lb/day)	Emission Decreases (lb/day)	Δ	Max. 212(g) Daily Emission Increase (lb/day)
CO	12	2	9	+5	220
NOx	6	7	3	+10	40
PM10	1	1	0	+2	30
ROG	30	0	0	+30	30

SOx	0	0	0	0	60
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PARAGRAPH 212(c)(3):

Both pieces of equipment will result in a MICR of less than one in a million and a HIA and HIC less than one (see Rule 1401 evaluation section). Therefore, a public notice will not be required under this section.

PARAGRAPH 212(g):

This section requires a public notice for all new or modified sources that result in emission increases exceeding any of the daily maximums as specified by Rule 212(g).

Printing Press

The printing press will replace two existing printing presses. There will be no increase in maximum possible VOC emissions because of the facility cap. However, since the BTU rating of the oven on the new press is higher than the combined rating of the ovens of the two existing presses, there will be a possible increase in NOx, CO and PM10 emissions due to increased natural gas usage. The NOx, CO and PM10 emissions will remain below the limits specified in Rule 212(g). Although the press qualifies as a functionally identical replacement under the guidelines for Rule 212, because there is an increase in other criteria pollutant emissions, a VOC emission of greater than 30 lb/day will trigger a public notice even though VOC emissions are not increasing from the previous permits. Therefore, the company has chosen to limit the VOC emissions from this new press to 900 lb VOC per month. Also, a condition will be added to require the removal of the existing presses. This paragraph only concerns equipment specific emissions, and the facility emissions will remain the same at 7800 lb VOC/month. The emissions for the new press are summarized below:

Pollutant	Emission Increases (lb/day)	Emission Decreases (lb/day)	Δ	Max. 212(g) Daily Emission Increase (lb/day)
CO	12	9	+3	220
NOx	6	3	+3	40
PM10	1	0	+1	30
ROG	30	0	+30	30
SOx	0	0	0	60

RTO

The equipment addition of the printing press will result in emission increases of ROG, PM10, NOx, SOx and CO. The increases for these pollutants will be less than the limits specified in Rule 212(g). Therefore, a 30-day public notice period will not be required under this paragraph. The emission increases for the RTO are summarized below:

Pollutant	Emission Increases (lb/day)	Max. 212(g) Daily Emission Increase (lb/day)
CO	2	220
NOx	7	40
PM10	1	30
ROG	0	30

SOx	0	60
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RULE 401, VISIBLE EMISSIONS

With the proper use and operation of the printing presses and RTOs, no visible emissions are expected.

RULE 402, NUISANCE

With the proper operation of the printing presses and RTO, no nuisance problems are expected at this facility. The facility is located within an industrial area. There are no adjacent residences to the facility. There have been no recent complaints filed against the facility within the past 3 years. Compliance with this rule is expected.

RULE 404, PARTICULATE MATTER - CONCENTRATION

The RTO will be exhausted at a rate of 15,000 cubic feet per hour. Based on the PM emissions calculated above, the concentration of PM10 exhausted will be well below the limits of this rule.

RULE 1130, GRAPHIC ARTS

The company will be using inks that have VOC contents of 2.8 to 3.1 lb VOC/gal (336 to 372 g VOC/L). This rule requires inks to have a VOC content less than 300 g VOC/L unless they have an approved emission control system. The facility will have two RTOs that will need to meet the control efficiency set by the following equation or 75% whichever is greater:

$$C.E. = \left[1 - \left\{ \frac{VOC_{LWC}}{VOC_{LWn, \max}} \times \frac{1 - (VOC_{LWn, \max} / D_n)}{1 - (VOC_{LWc} / D_c)} \right\} \right] \times 100$$

$$C.E. = \left[1 - \left\{ \frac{300}{372} \times \frac{1 - (372 / 898.3)}{1 - (300 / 880)} \right\} \right] \times 100 = 28.3\%$$

Since this is the lesser of the two values, at least a 75% overall control efficiency will be required. The efficiency of the RTO is greater than this value due to BACT requirements.

The fountain solution will be mixed in a ratio of 10 oz of concentrate to one gallon of water. This results in a VOC content of the Print Easy 4050 solution is 0.77 lb VOC/gal. The resulting VOC content of the mixture is 6.7 g VOC/L which is less than both limits of this rule (refrigerated and non-refrigerated). Compliance with this rule is expected.

RULE 1171, SOLVENT CLEANING OPERATIONS

Quebecor is using Peak 50 for a blanket and roller wash that has a material VOC content of 3.62 lb VOC/gal (434 g VOC per liter). This VOC content will comply with the VOC limit of 500 g/L in this rule. Compliance with this rule is expected.

REGULATION XIII

RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The facility qualifies as a major source due to their VOC emission potential. The present BACT guidelines require that the lithographic printing press operations use of low-VOC fountain solution (<8% by volume VOC), washes with low vapor pressure (<10 mmHg). NOx from the ovens shall not exceed 30 ppm (@3 % O₂). After mixing, the fountain solution contains less than 8% VOC by volume (see calculation below). The blanket/roller wash has a vapor pressure of 3 mm Hg. The dryer ovens will be equipped with low NOx burners, which will emit less than 30 ppm NOx. The VOC emissions from the printing press will be vented to the RTO. The RTO combustion temperature shall be maintained at 1550°F, and a minimum residence time of 0.3 seconds. A source test will be conducted to determine the collection efficiency and destruction efficiency of the equipment. Compliance with this rule is expected.

$$\text{Volume VOC} = 10 \text{ oz sol'n} \cdot \frac{1 \text{ gal}}{128 \text{ oz}} \cdot \left(\frac{0.77 \frac{\text{lb VOC}}{\text{gal}}}{8.92 \frac{\text{lb}}{\text{gal}}} \right) = 0.007 \text{ gal VOC}$$

$$\% \text{ VOC Fountain Soln} = \frac{\text{Gal VOC}}{\text{Gal Material}} = \frac{0.007 \text{ gal VOC}}{0.08 \text{ gal sol'n} + 1.0 \text{ gal water}} = 0.006 = 0.6\%$$

RULE 1303(b)(1), MODELING

There are presently no modeling requirements for VOC emissions or SOx emissions. The emissions for each piece of equipment are listed in the table below. The emissions from each piece of equipment will be less than the corresponding Screening Analysis values in Table A-1 in Rule 1303. Compliance with this rule is expected.

Equipment		NOx lb/hr	CO lb/hr	PM10 lb/hr
Press Dryer		0.24	0.485	0.047
RTO		0.29	0.1	0.022
Allowable Emissions	Dryer	0.47	25.9	2.8
	RTO	0.31	17.1	1.9

RULE 1304(c)(1), OFFSET EXEMPTIONS

The facility will continue to operate under facility limit for VOC and NOx of 7800 lb VOC/month and 667 lb NOx/month, and this new equipment will operate under this bubble. Therefore, there will be no overall increase in VOC or NOx emissions at this facility. There will be increases in the emission of PM₁₀ and CO, however the facility potential to emit will remain less than the exemption limits in Table A of Rule 1304. Therefore, Quebecor will be exempt from providing emission offsets.

Pollutant	Current PTE (lb/day)	Emission Increase (lb/day)	Proposed Facility 30-Day (lb/day)	1304 Offset exemption Limit (lb/day)
CO	26	5	31	160
NOx	22	0	22	N/A, No increase
PM10	4	2	6	22
ROG	260	260	260	N/A, No increase

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SOx	0	0	0	N/A, No increase
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RULE 1303(b)(4):

The facility is expected to be in full compliance with all applicable rules and regulations of the District.

RULES 1303(b)(5)(A) & 1303(b)(5)(D):

The proposed project does not qualify as a major modification at a major polluting facility. Further, the proposed project is exempt from CEQA according to the responses Quebecor provided on Form 400-CEQA for this project. Their responses in "Review of Impacts Which May Trigger CEQA" on Form 400-CEQA were all marked "No".

RULE 1303(b)(5)(B):

The Increase in emissions associated with the proposed new construction of the new printing press and RTO does not qualify as a major modification at an existing major polluting facility.

RULE 1303(b)(5)(C):

A modeling analysis for plume visibility is not required since the net emission increase from the proposed project does not exceed 15 ton/yr of PM10 or 40 ton/yr of NOx.

RULE 1401, NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

According to the Material Safety Data Sheets (MSDS) that were submitted with this application, Quebecor will be using some materials that contain toxic air contaminants identified in Table 1 of Rule 1401, with an effective date of March 4, 2005 or earlier. Although, the printing press is replacing two presses, the new press will not be exempt from evaluation under 1401(g)(1)(B) because it will cause an increase in emissions due to the higher overall BTU rating. In addition, the RTO modification will need to be evaluated under this rule for the same reason. For the materials used in the press, the inks do not contain any toxic compounds, however the fountain solution contains ethylene glycol and ethylene glycol monobutyl ether (EGME), and both washes contain naphthalene, a carcinogen. In addition, the combustion of natural gas in the press dryer and the RTO will result in the emission of toxic compounds. The emissions from the use of blanket wash and fountain solution were calculated based on the maximum usage under the facility limit, and the maximum emissions from the combustion of natural gas were calculated as allowed by the maximum rating of the burners on the dryer and RTO. Calculations for the toxic emissions from the combustion of natural gas will be based on the AB2588 Ventura County APCD Emission factors. VOC emissions are assumed to be carried into the dryer and vented to the RTO. From the previous evaluations for the same equipment at this facility, 99.5% of the VOC emissions are collected, and then 99% of those VOC emissions are destroyed. Therefore, the 0.5% of the VOC emissions that are not collected will be accounted to the health risk assessment for the press. Another health risk assessment was completed for the RTO. The remaining emissions from the blanket wash and the fountain solution that were carried into the dryer were included in the health risk assessment minus the expected destruction efficiency of the RTO.

Tier II health risk assessments were completed for both the RTO and the printing press. The results, located at the end of this evaluation, show that the maximum emissions will cause a MICR that will be less than one in a million, and the HIA and HIC will both be less than one for each piece of equipment. In addition, there will be a permit condition disallowing the use of materials that contain toxic air contaminants identified in Rule 1401, with an effective date of March 4, 2005 or earlier, except for ethylene glycol (CAS No. 107-21-1), ethylene glycol monobutyl ether (CAS No. 111-76-2) and naphthalene (CAS No. 91-20-3). Compliance with this rule is expected.

40 CFR PART 64: COMPLIANCE ASSURANCE MONITORING

The company currently operates under a Compliance Assurance Monitoring Plan as part of their current Title V permit pursuant to the requirements of 40 CFR Part 64. The new RTO will be subjected to the same conditions as the existing RTO. The RTOs are used to control VOC emissions from the printing presses at the facility. The operating temperatures of the RTOs will be maintained at a minimum of 1,550 °F. This facility operates and maintains temperature measuring and recording systems for the RTO to continuously measure and record the combustion chamber temperatures pursuant to the operation and maintenance requirements specified in 40 CFR Part 64.7. Such systems are expected to have an accuracy of within 1% of the temperature being monitored and will be inspected, maintained, and calibrated on an annual basis in accordance with the manufacturer’s specifications.

Pursuant to 40 CFR Part 64, a deviation has been defined as when a combustion chamber temperature of less than 1,550 °F occurs during normal operation of the equipment it serves. The operator is required to review the records of the combustion chamber temperature on a daily basis to determine if a deviation occurs or to install an alarm system to alert the operator when a deviation occurs. Whenever a deviation occurs, the operator is required to inspect this equipment to identify the cause of such a deviation, take immediate corrective action to maintain the combustion chamber temperature at or above 1,550 °F and keep records of the duration and cause (including unknown cause, if applicable) of the deviation and the corrective action taken.

The operator is required to report all deviations to the AQMD on a semi-annual basis pursuant to the requirements specified in 40 CFR Part 64.9 and Condition Nos. 22 and 23 in Section K of their Title V permit. The semi-annual monitoring report shall include the total operating time of this equipment and the total accumulated duration of all deviations for each semi-annual reporting period specified in Condition No. 23 in Section K of their Title V permit. In addition, the operator is required to submit an application with a Quality Improvement Plan (QIP) in accordance with 40 CFR Part 64.8 to the AQMD if an accumulation of deviations exceeds 5 percent duration of this equipment’s total operating time for any semi-annual reporting period specified in Condition No. 23 in Section K of their Title V permit. The required QIP shall be submitted to the AQMD within 90 calendar days after the due date for the semi-annual monitoring report.

As a part of the CAM plan, the operator is required to inspect and maintain all components of the RTO’s on an annual basis in accordance with the manufacturer’s specifications. The operator is also required to keep adequate records in a format that is acceptable to the AQMD to demonstrate compliance with all applicable CAM requirements specified in 40 CFR Part 64.9 for a minimum of five years. This facility is expected to comply with all requirements specified in 40 CFR Part 64. Condition No.3 in Section D for the RTOs is imposed to implement the above-described CAM requirements.

REGULATION XXX: TITLE V PERMITS

This facility is not in the RECLAIM program. The proposed project is considered as a “de minimis significant permit revision” to the Title V permit for this facility.

Rule 3000(b)(6) defines a “de minimis significant permit revision” as any Title V permit revision where the cumulative emission increases of non-RECLAIM pollutants or hazardous air pollutants (HAPs) from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30

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VOC	30
NO _x	40
PM ₁₀	30
SO _x	60
CO	220

To determine if a project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or HAPs, emission increases for non-RECLAIM pollutants or HAPs resulting from all permit revisions that are made after the issuance of the Title V renewal permit shall be accumulated and compared to the above threshold levels. This proposed project is the first permit revision to the Title V renewal permit issued to this facility on August 1, 2007. The following table summarizes the cumulative emission increases resulting from all permit revisions since the Title V renewal permit was issued:

Revision	HAP	VOC	NO _x	PM ₁₀	SO _x	CO
1 st Permit Revision: Replacement of printing presses under A/Ns 401090-1 and addition of 2 nd RTO.	0	0	0	2	0	5
Cumulative Total	0	0	0	2	0	5
Maximum Daily	30	30	40	30	60	220

Since the cumulative emission increases resulting from all permit revisions are not greater than any of the emission threshold levels, this proposed project is considered as a “de minimis significant permit revision”.

RECOMMENDATION:

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision”, it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V permit will be issued to this facility.

PERMIT CONDITIONS:

The equipment will be subject to the permit conditions listed below;

A/N 466987-Printing Press

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

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3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS THE OVEN IS VENTED TO AN AIR POLLUTION CONTROL SYSTEM WHICH HAS BEEN ISSUED A VALID PERMIT BY THE EXECUTIVE OFFICER.
[RULE 1303 (a)(1)-BACT]
4. THE TOTAL QUANTITY OF VOLATILE ORGANIC COMPOUNDS (VOC) EMISSIONS DISCHARGED TO THE ATMOSPHERE FROM THIS EQUIPMENT SHALL NOT EXCEED 900 POUNDS IN ANY CALENDAR MONTH. THE VOC EMISSIONS SHALL BE CALCULATED USING THE REQUIRED CONTROL EFFICIENCY SPECIFIED IN THE PERMIT FOR THE APC SYSTEM.
[RULE 1303(b)(2)-OFFSET]
5. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE 1 WITH EFFECTIVE DATE OF MARCH 4, 2005 OR EARLIER, EXCEPT ETHYLENE GLYCOL MONOBUTYL ETHER (CAS NO. 111-76-2), ETHYLENE GLYCOL (CAS NO. 107-21-1), AND NAPHTHALENE (CAS NO. 91-20-3).
[RULE 1401]
6. THE COMPOSITE VAPOR PRESSURE OF THE VOC IN THE BLANKET WASH AND ROLLER WASHES SHALL NOT EXCEED 6 MM HG AT 68 DEGREES FAHRENHEIT.
[RULE 1303 (a)(1)-BACT]
7. THE VOC CONTENT OF THE FOUNTAIN SOLUTION USED IN THIS EQUIPMENT SHALL NOT EXCEED 8 % BY VOLUME, AS APPLIED, INCLUDING WATER AND EXEMPT SOLVENTS.
[RULE 1303 (a)(1)-BACT]
8. THE OXIDES OF NITROGEN (NO_x) EMISSIONS DISCHARGED FROM THIS EQUIPMENT SHALL NOT EXCEED 30 PPMV, CALCULATED AS NO₂ ON A DRY BASIS AT 3 % OXYGEN AVERAGED OVER 15 CONSECUTIVE MINUTES.
[RULE 1303(a)(1)-BACT]
9. IN ADDITION TO RECORDKEEPING REQUIREMENTS IN RULE 109, THE OPERATOR SHALL KEEP ADEQUATE RECORDS FOR THIS EQUIPMENT FOR THE FOLLOWING:
 - A. DENSITY OF INKS, IN POUNDS PER GALLON.
 - B. PERCENTAGE BY WEIGHT OF LITHOGRAPHIC OILS IN EACH INK.
 - C. INK ABSORPTION FACTOR AS SPECIFIED BY CURRENT SCAQMD GUIDELINES.
 - D. VOC CONTENT OF FOUNTAIN SOLUTION, WASH MATERIALS, AND ANY OTHER MATERIALS, IN POUNDS PER GALLON, AS APPLIED, INCLUDING WATER AND PERCENT VOC BY VOLUME.
 - E. CALENDAR MONTHLY VOC EMISSIONS IN POUNDS.
 - F. OTHER DATA AS REQUIRED TO VERIFY COMPLIANCE WITH THE CONDITIONS SPECIFIED IN THIS PERMIT.

ALL RECORDS SHALL BE PREPARED IN A FORMAT WHICH IS ACCEPTABLE TO THE DISTRICT, SHALL BE RETAINED ON THE PREMISES FOR AT LEAST FIVE YEARS, AND SHALL BE MADE AVAILABLE UPON REQUEST OF THE EXECUTIVE OFFICER OR HIS REPRESENTATIVE.
[RULE 109, 1303(b)(2)-OFFSET]
10. UPON COMPLETION OF CONSTRUCTION AND OPERATION OF THIS EQUIPMENT, THE OPERATOR SHALL NOT OPERATE THE PRINTING PRESSES UNDER AQMD PERMIT NOS. F68628 AND F68187, AND SHALL SURRENDER THE PERMITS TO THE AQMD.
[RULE 1303(b)(2)-OFFSET]

Emissions And Requirements:

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11. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

VOC: RULE 109
VOC: RULE 1130, SEE APPENDIX B FOR EMISSION LIMITS
VOC: RULE 1171, SEE APPENDIX B FOR EMISSION LIMITS
CO: 2000 PPMV, RULE 407
NOx: 30 PPMV, RULE 1303(a)(1)-BACT
PM: 0.1 GR/SCF, RULE 409
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

A/N 466988-RTO

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

[RULE 204]

3. THE OPERATOR SHALL OPERATE AND MAINTAIN THE THERMAL OXIDIZERS ACCORDING TO THE FOLLOWING REQUIREMENTS:

THE COMBUSTION CHAMBER TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF 1,550 DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

THE OPERATOR SHALL OPERATE AND MAINTAIN A TEMPERATURE MEASURING AND RECORDING SYSTEM TO CONTINUOUSLY MEASURE AND RECORD THE COMBUSTION CHAMBER TEMPERATURE PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN A COMBUSTION CHAMBER TEMPERATURE OF LESS THAN 1,550 DEGREES FAHRENHEIT OCCURS DURING NORMAL OPERATION OF THE EQUIPMENT IT SERVES. THE OPERATOR SHALL REVIEW THE RECORDS OF THE COMBUSTION CHAMBER TEMPERATURE ON A DAILY BASIS TO DETERMINE IF A DEVIATION OCCURS OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.

WHENEVER A DEVIATION OCCURS, THE OPERATOR SHALL INSPECT THIS EQUIPMENT TO IDENTIFY THE CAUSE OF SUCH A DEVIATION, TAKE IMMEDIATE CORRECTIVE ACTION TO MAINTAIN THE COMBUSTION CHAMBER TEMPERATURE AT OR ABOVE 1,550 DEGREES FAHRENHEIT, AND KEEP RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTION TAKEN.

ALL DEVIATIONS SHALL BE REPORTED TO THE AQMD PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT. THE REPORT SHALL INCLUDE THE TOTAL OPERATING TIME OF THIS EQUIPMENT AND THE TOTAL ACCUMULATED DURATION OF ALL DEVIATIONS FOR EACH SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT.

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THE OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE AQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5 PERCENT DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE AQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE FOR THE SEMI-ANNUAL MONITORING REPORT.

THE OPERATOR SHALL INSPECT AND MAINTAIN ALL COMPONENTS OF THIS EQUIPMENT ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE OPERATOR SHALL KEEP ADEQUATE RECORDS IN A FORMAT THAT IS ACCEPTABLE TO THE AQMD TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS SPECIFIED IN THIS CONDITION AND 40 CFR PART 64.9 FOR A MINIMUM OF FIVE YEARS. [RULE 1303(a)(1)-BACT, RULE 3004(a)(4)-PERIODIC MONITORING, 40CFR PART 64]

4. THE TEMPERATURE INDICATING AND RECORDING SYSTEM SHALL BE IN OPERATION WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.
[RULE 1303(a)(1)-BACT]
5. THE OPERATOR SHALL OPERATE AND MAINTAIN THIS EQUIPMENT TO ACHIEVE DESTRUCTION EFFICIENCY OF AT LEAST 99 % BY WEIGHT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.
[RULE 1303(b)(2)-OFFSET]
6. THE OPERATOR SHALL OPERATE AND MAINTAIN THIS EQUIPMENT TO ACHIEVE AN OVERALL CONTROL EFFICIENCY OF AT LEAST 98.5 %.
[RULE 1303(a)(1)-BACT, 1303(b)(2)-OFFSET]
7. BOTH THERMAL OXIDIZERS SHALL BE IN FULL OPERATION WHENEVER THE BASIC EQUIPMENT THEY SERVE IS IN OPERATION.
[RULE 1303(a)(1)-BACT, 1303(b)(2)-OFFSET]
8. THE OXIDES OF NITROGEN (NO_x) EMISSIONS DISCHARGED FROM THIS EQUIPMENT SHALL NOT EXCEED 78 PPMV, CALCULATED AS NO₂ ON A DRY BASIS AT 3 % OXYGEN AVERAGED OVER 60 CONSECUTIVE MINUTES.
[RULE 1303(b)(2)-OFFSET]
9. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT SOURCE TESTS UNDER THE FOLLOWING CONDITIONS:
 - A. THE SOURCE TESTS SHALL BE CONDUCTED NO LATER THAN 180 DAYS AFTER THE INITIAL START-UP OF THIS EQUIPMENT UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT.
 - B. A SOURCE TEST PROTOCOL SHALL BE SUBMITTED TO THE NO LATER THAN 60 DAYS AFTER THE INITIAL START-UP OF THIS EQUIPMENT UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT. THE TEST PROTOCOL SHALL BE APPROVED IN WRITING BY THE DISTRICT BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE COMPLETED DISTRICT FORMS ST-1 AND ST-2 SPECIFYING THE PROPOSED OPERATING CONDITIONS OF THE EQUIPMENT DURING THE TEST, THE IDENTITY OF THE TESTING LABORATORY, A STATEMENT FROM THE TESTING LABORATORY CERTIFYING IT MEETS THE CRITERIA IN DISTRICT RULE 304(k), AND A DESCRIPTION OF THE SAMPLING AND ANALYTICAL PROCEDURES TO BE USED.

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- C. THE SOURCE TESTS SHALL CONSIST OF, BUT MAY NOT BE LIMITED TO, TESTING AT THE INLET AND THE EXHAUST OF THE AFTERBURNER FOR:
- (1) VOLATILE ORGANIC COMPOUND (VOC) IN PPMV AND LBS/HR
 - (2) OXIDES OF NITROGEN (AFTERBURNER EXHAUST ONLY)
 - (3) CARBON MONOXIDE (AFTERBURNER EXHAUST ONLY)
 - (4) VOC DESTRUCTION EFFICIENCY
 - (5) VOC COLLECTION EFFICIENCY
 - (6) USAGE OF ALL VOC-CONTAINING MATERIALS DURING THE TEST
 - (7) OXYGEN CONTENT
 - (8) MOISTURE CONTENT
 - (9) FLOW RATE
 - (10) TEMPERATURE
- D. WRITTEN NOTICE OF THE SOURCE TESTS SHALL BE SUBMITTED TO THE DISTRICT AT LEAST 14 DAYS PRIOR TO SOURCE TESTING DATE SO THAT AN OBSERVER FROM THE DISTRICT MAY BE PRESENT.
- E. TWO COMPLETE COPIES OF THE SOURCE TEST REPORTS SHALL BE SUBMITTED TO THE DISTRICT WITHIN 45 DAYS AFTER THE SOURCE TESTING DATE. THE SOURCE TEST REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO ALL TESTING DATA REQUIRED BY THIS CONDITION.
- F. A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQUIRED TEST METHODS FOR CRITERIA POLLUTANTS TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.
- G. SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES, PURSUANT TO RULE 217. [RULE 1303(a)(1)-BACT, 1303(b)(2)-OFFSET]

Periodic Monitoring:

10. THE OPERATOR SHALL CONDUCT SOURCE TEST(S) IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
- A. THE TEST SHALL BE CONDUCTED AT LEAST ONCE DURING THE LIFE OF THE PERMIT.
 - B. THE TEST SHALL BE CONDUCTED NO LATER THAN JULY 31, 2011 UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT.
 - C. THE TEST SHALL BE CONDUCTED TO DETERMINE THE VOC EMISSIONS USING AN APPROVED DISTRICT METHOD TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE PERMIT CONDITION(S), RULES AND REGULATIONS.
 - D. THE SOURCE TEST SHALL BE CONDUCTED WHILE THE OXIDIZER IS OPERATING AT A TEMPERATURE OF NOT LESS THAN THE MINIMUM OPERATING TEMPERATURE SPECIFIED IN THIS PERMIT. IF THE OPERATING TEMPERATURE DURING THE SOURCE TEST IS GREATER THAN THE MINIMUM OPERATING TEMPERATURE SPECIFIED IN THIS PERMIT, THE MINIMUM OPERATING TEMPERATURE SPECIFIED IN THIS PERMIT MAY BE INCREASED TO REFLECT THE OPERATING TEMPERATURE DURING THE SOURCE TEST.
 - E. THE OPERATOR SHALL COMPLY WITH ADMINISTRATIVE CONDITIONS NOS. 8, 9, AND 10 OF SECTION E OF THIS FACILITY PERMIT.

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- F. THE OPERATOR SHALL SUBMIT TWO COMPLETE COPIES OF THE SOURCE TEST REPORT SPECIFIED IN CONDITION NO. 9 OF SECTION E OF THIS FACILITY PERMIT TO THE DISTRICT ENGINEERING AND COMPLIANCE DIVISION. THE ENGINEERING COPY OF THE REPORT SHALL BE SENT TO: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, COATING, PRINTING AND AEROSPACE OPERATIONS, ATTN: AIR QUALITY AND COMPLIANCE SUPERVISOR, 21865 COPLEY DRIVE, DIAMOND BAR, CA 91765. THE COMPLIANCE COPY OF THE REPORT SHALL BE SENT TO: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, P.O. BOX 4941, DIAMOND BAR, CA 91765.
[RULE 3004 (a)(4)]

Emissions And Requirements:

11. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 407
PM: 0.1 GR/SCF, RULE 409
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
NOx: 78 PPMV, RULE 1303(b)(2)-OFFSET

TIER 2 SCREENING RISK ASSESSMENT

A/N: 466988-RTO
Fac: Quebecor

Application deemed complete date: 04/26/07

2. Tier 2 Data

MET Factor	0.81
4 hr	0.81
6 or 7 hrs	0.83

Dispersion Factors

3	3A & 3B For Chronic X/Q
6	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	1.084	63.4
Commercial	1.2873	74.635

Adjustment and Intake Factors

	Afann	DBR	EVF
Residential	1	302	0.96
Worker	1	149	0.38

A/N: 466988-RTO

Date: 04/26/07

TIER 2 RESULTS

5. MICR

MICR = CP (mg/(kg-day))⁻¹ * Q (ton/yr) * (X/Q) * Afann * Met * DBR * EVF * 1.E-6 * MP

Compound	Residential	Commercial
Napthalene	3.24E-07	7.52E-08
Ethylene glycol monobutyl ether		
Ethylene glycol		
Toluene (methyl benzene)		
Xylenes (isomers and mixtures)		
Acetaldehyde	1.37E-10	3.17E-11
Acrolein		
Ammonia		
Benzene (including benzene from gasoline)	2.55E-09	5.91E-10
Ethyl benzene		
Formaldehyde	1.13E-09	2.63E-10
Hexane (n-)		
Napthalene	1.14E-10	2.65E-11
PolyCyclic Aromatic Hydrocarbon (PAHs)	3.69E-08	4.21E-09
Propylene		
Total	3.65E-07	8.03E-08

Pass

Pass

No Cancer Burden, MICR<1.E=-6

5a. Cancer Burden	no
X/Q for one-in-a-million:	
Distance (meter)	no data
Area (km2):	
Population:	
Cancer Burden:	

6. Hazard Index

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic
Alimentary system (liver) - AL		6.17E-08
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	1.37E-06	1.71E-04
Endocrine system - END		6.17E-08
Eye	3.44E-03	6.59E-04
Hematopoietic system - HEM	1.16E-06	1.74E-06
Immune system - IMM	3.97E-05	
Kidney - KID		1.67E-04
Nervous system - NS	2.12E-07	3.85E-06
Reproductive system - REP	1.37E-06	
Respiratory system - RES	3.44E-03	2.28E-03
Skin		

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Date: 04/26/07

6a. Hazard Index Acute

HIA = [Q(lb/hr) * (X/Q)max] * AF/ Acute REL

HIA - Residential										
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Napthalene										
Ethylene glycol monobutyl				1.33E-04					1.33E-04	
Ethylene glycol										
Toluene (methyl benzene)			1.80E-07	1.80E-07			1.80E-07	1.80E-07	1.80E-07	
Xylenes (isomers and mixture)				2.24E-07					2.24E-07	
Acetaldehyde										
Acrolein				2.57E-03					2.57E-03	
Ammonia				1.81E-04					1.81E-04	
Benzene (including benzene)			9.83E-07		9.83E-07	9.83E-07		9.83E-07		
Ethyl benzene										
Formaldehyde				3.28E-05		3.28E-05			3.28E-05	
Hexane (n-)										
Napthalene										
PolyCyclic Aromatic Hydrocarbons										
Propylene										
Total			1.16E-06	2.92E-03	9.83E-07	3.38E-05	1.80E-07	1.16E-06	2.92E-03	

HIA - Commercial										
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Napthalene										
Ethylene glycol monobutyl				1.57E-04					1.57E-04	
Ethylene glycol										
Toluene (methyl benzene)			2.12E-07	2.12E-07			2.12E-07	2.12E-07	2.12E-07	
Xylenes (isomers and mixtur				2.64E-07					2.64E-07	
Acetaldehyde										
Acrolein				3.03E-03					3.03E-03	
Ammonia				2.13E-04					2.13E-04	
Benzene (including benzene			1.16E-06		1.16E-06	1.16E-06		1.16E-06		
Ethyl benzene										
Formaldehyde				3.86E-05		3.86E-05			3.86E-05	
Hexane (n-)										
Napthalene										
PolyCyclic Aromatic Hydroc										
Propylene										
Total			1.37E-06	3.44E-03	1.16E-06	3.97E-05	2.12E-07	1.37E-06	3.44E-03	

6b. Hazard Index Chronic

$$HIC = [Q(\text{ton/yr}) * (X/Q) * MET * MP] / \text{Chronic REL}$$

Compound	HIC - Residential												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Napthalene												1.04E-03	
Ethylene glycol monobutyl													
Ethylene glycol				1.41E-04					1.41E-04			1.41E-04	
Toluene (methyl benzene)				1.34E-06						1.34E-06		1.34E-06	
Xylenes (isomers and mixture)										4.26E-07		4.26E-07	
Acetaldehyde												5.24E-06	
Acrolein						4.93E-04						4.93E-04	
Ammonia												1.75E-04	
Benzene (including benzene)				1.46E-06			1.46E-06			1.46E-06			
Ethyl benzene	5.20E-08			5.20E-08	5.20E-08				5.20E-08				
Formaldehyde						6.21E-05						6.21E-05	
Hexane (n-)										9.86E-09			
Napthalene												3.65E-07	
PolyCyclic Aromatic Hydrocarbons													
Propylene												2.67E-06	
Total	5.20E-08			1.44E-04	5.20E-08	5.55E-04	1.46E-06		1.41E-04	3.24E-06		1.92E-03	

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Compound	HIC - Commercial											SKIN	
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP		RESP
Napthalene												1.23E-03	
Ethylene glycol monobutyl													
Ethylene glycol				1.67E-04					1.67E-04			1.67E-04	
Toluene (methyl benzene)				1.59E-06						1.59E-06		1.59E-06	
Xylenes (isomers and mixtur										5.06E-07		5.06E-07	
Acetaldehyde												6.22E-06	
Acrolein						5.85E-04						5.85E-04	
Ammonia												2.08E-04	
Benzene (including benzene				1.74E-06			1.74E-06			1.74E-06			
Ethyl benzene	6.17E-08			6.17E-08	6.17E-08				6.17E-08				
Formaldehyde						7.38E-05						7.38E-05	
Hexane (n-)										1.17E-08			
Napthalene												4.34E-07	
PolyCyclic Aromatic Hydroc													
Propylene												3.17E-06	
Total	6.17E-08			1.71E-04	6.17E-08	6.59E-04	1.74E-06		1.67E-04	3.85E-06		2.28E-03	