GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Jeng-Hon Su

FROM: Susan Jenkins

DATE: April 2, 2024

Facility Name:	**Fort Dearborn Company**
AIRS No.:	085-00004
Location:	Dawsonville, GA (Dawson County)
Application #:	29210 (**Expedited**)
Date of Application:	February 26, 2024

Background Information

Fort Dearborn Company (hereinafter "facility") is an existing facility located at 103 Lumpkin Campground Road North in Dawsonville (Dawson County). The facility is a commercial printing facility that uses flexographic and rotogravure printing presses. The facility is a synthetic minor source for emissions of volatile organic compounds (VOCs) and individual/total hazardous air pollutants (HAPs). The facility is currently permitted under Permit Nos. 2759-085-0004-S-03-0 (6/7/2017) and 2759-085-0004-S-03-1 (1/12/2021).

Purpose of Application

The facility submitted an **expedited** air permit application, assigned number 29210, dated February 26, 2024, for the construction and operation of a 10-color, 42″ flexographic press (Source Code P10). Proposed press P10 will replace the DCM rotogravure press with Source Code P6. Proposed press P10 will be controlled by the existing regenerative thermal oxidizer (RTO, ID No. 8ES).

Updated Equipment List

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
P1	Flexographic Printing Press	2008	PTE1 8ES	Permanent Total Enclosure RTO
P8	Flexographic Printing Press	2017	PTE2 8ES	Permanent Total Enclosure RTO
P9	Flexographic Printing Press	2020	PTE1 8ES	Permanent Total Enclosure RTO
P10*	Flexographic Printing Press	2024*	PTE2 8ES	Permanent Total Enclosure RTO

*proposed within current application

Emissions Summary

VOC emissions from the proposed press and housekeeping (cleaning operations) were computed using the potential ink plus solvent usage, and the maximum VOC weight percent content.

Individual and total HAPs from the proposed press and from housekeeping (cleaning operations) were computed using the potential ink plus solvent usage and the maximum individual HAP content. The facility has the potential to emit the following HAPs from ink and solvent usage and from cleaning operations:

Table 1	
HAP	**CAS No.**
Glycol Ethers	N/A
Acetaldehyde	75070
4,4' diphenylmethane diisocyanate (MDI)	101688
Ethylbenzene	100414
Ethylene Glycol	107211
Hexane	110543
MIBK	108101
Toluene	108883
1,1,1 trichloroethane	71556
Vinyl acetate	108054
Xylene (o-, m-, p-isomer)	1330207
Xylene (o-isomer)	95476
Xylene (m-isomer)	108383
Xylene (p-isomer)	106423

Note: VOC and HAP emissions from the use of additional solvents, cleaners, and mineral spirits occur at process stages which are located post-printing and post-RTO system. The potential and actual VOC and HAP emissions from this material usage are computed on an uncontrolled basis.

Facility-Wide Emissions
(in tons per year)

Table 2			
Pollutant	**Potential Emissions**		
	Before Mod.	**After Mod.**	**Emissions Change**
$PM/PM_{10}/PM_{2.5}$	--	--	--
NOx	--	--	--
SO_2	--	--	--
CO	--	--	--
VOC	<100	<100	0.0
Max. Individual HAP	<10	<10	0.0
Total HAP	<25	<25	0.0

Table 2			
Pollutant	**Potential Emissions**		
	Before Mod.	**After Mod.**	**Emissions Change**
Total GHG (if applicable)	--	--	--

Regulatory Applicability

The facility is subject to Georgia Rules 391-3-1-.02(2)(b) and (e) and no changes are proposed based on the proposed project.

The facility is not subject to Georgia Rule 391-3-1-.02(2)(mm) because the facility's potential to emit of VOCs is limited to less than 100 tons during any consecutive twelve-month period.

40 CFR 60 Subpart QQ-Standards of Performance for the Graphic Arts Industry: Publication Rotogravure Printing ("NSPS QQ"): NSPS QQ is not an applicable requirement because the facility does not operate any existing or proposed publication rotogravure printing presses.

The facility is not subject to an Area Source Standard under 40 CFR 63.

Permit Conditions

Existing Conditions 2.1 through 4.1, 4.3 and 4.4 still apply and remain unchanged.

Existing Condition 4.2 has been **modified** to remove the 72 hours per year requirement.

Existing Condition 4.5 establishes the requirement to set the VOC DRE to 0% for the RTO when the RTO is not in operation or when the combustion chamber temperature is below the established temperature. This Existing Condition is being **moved** to New Conditions 7.8 and 7.9. Existing Condition 4.5 is **modified** to require the facility to take all reasonable precautions to minimize fugitive VOC emissions.

Existing Condition 5.1 is **modified** to require the facility to use the continuous combustion chamber temperature of the RTO to determine and record the consecutive three-hour average temperature for every hour of operation of the RTO.

Existing Condition 5.2 is **modified** to clarify the applicable monitoring of the permanent total enclosures.

New Condition 5.3 is added to require the facility to comply with this general monitoring requirement.

Existing Condition 6.2 requires the facility to conduct a Method 204 test to verify the permanent total enclosure (PTE) around the press P9. The facility conducted this test on May 4, 2021, and verified that press P9 is housed in a PTE. This Existing Condition is **modified** to require the facility to conduct a Method 204 tests to verify that proposed press P10 is housed in a PTE. The Method 204 testing shall be conducted within 180 days after the initial startup of Press P10.

Existing Condition 6.3 requires the facility to conduct VOC destruction efficiency test on the RTO at least once every 5 years. This Existing Condition is **modified** to require the facility to conduct this test on the RTO within 180 days after initial startup of press P10 while the associated flexographic presses are operating.

Existing Condition 7.3 is **modified** to reference **New Condition 7.8.**

Existing Condition 7.5 is **modified** to reference **New Condition 7.9**.

Existing Condition 7.7 is **deleted** and replaced with New Condition 7.10 as it pertains to operation of one or more of the presses without operating the RTO.

New Conditions 7.8 and 7.9 establish the formulas for computing actual VOC and individual/total HAPs. In addition, these conditions establish the criteria for setting the destruction efficiency to 0% and/or the capture efficiency to 0%.

New Condition 7.10 replaces Existing Condition 7.7 and this new condition establishes the excursions definitions associated with the capture system and the operation of the RTO.

New Condition 7.11 requires the facility to maintain records of the capture system monitoring requirements required by Existing Condition 5.2.

New Condition 7.12 establishes the notification of initial startup of proposed press P10 to the Division.

Toxic Impact Assessment

The Division conducted an updated assessment of whether the facility's operations comply with the Georgia Air Toxics Guideline ("Guideline"). The Minimum Emissions Rates (MERs) apply, in this case, since these potentially emitted TAPs are exhausted to the outdoor atmosphere through an unobstructed vertical stack. The following table summarizes the TAPs emitted by the facility:

Table 3: TAPs Analysis

TAP	CAS No.	A HAP?	A Uncontrolled PTE (lb/yr)[1]	B MER (lb/yr)	A>B?	Requires Modeling?
1,1,1 trichloroethane	71556	Yes	20,000	220,000	No	No
4,4' Diphenylmethane diisocyanate (MDI)	101688	Yes	20,000	146	Yes	Yes
Acetaldehyde	75070	Yes	20,000	1,110	Yes	Yes
Carbon Black	1333864	No	16,000	404	Yes	Yes
Diacetone Alcohol	123422	No	10,000	27,800	No	No
Dipropylene Glycol Methyl Ether	34590948	No	26,000	69,500	No	No
Ethanol	64175	No	124,000	219,000	No	No
Ethyl Acetate	141786	No	52,000	162,000	No	No
Ethylbenzene	100414	Yes	20,000	243,000	No	No
Ethylene Glycol	107211	Yes	20,000	20,100	No	No

[1] The PTE for individual HAPs is set at 10 tpy or 20,000 lb/yr. The PTE for non-HAPs is based on the uncontrolled PTE in tpy from Appendix D-Attachment 1.

Table 3: TAPs Analysis						
TAP	**CAS No.**	**A HAP?**	**A Uncontrolled PTE (lb/yr)[1]**	**B MER (lb/yr)**	**A>B?**	**Requires Modeling?**
Hexane	110543	Yes	20,000	170,000	No	No
Isopropyl Acetate	108214	No	10,000	110,000	No	No
Isopropyl Alcohol	67630	No	1,876,000	114,000	Yes	Yes
MIBK	108101	Yes	20,000	453,000	No	No
Propyl Acetate (n-)	109604	No	518,000	97,300	Yes	Yes
Propyl Alcohol (n-) or Propanol	71238	No	2,086,000	57,900	Yes	Yes
Titanium Dioxide (Total Dust)	13463677	No	182,000	1,740	Yes	Yes
Toluene	108883	Yes	20,000	1,220,000	No	No
Vinyl Acetate	108054	Yes	20,000	48,700	No	No
Xylene (o-, m-, p-isomers)	1330207	Yes	20,000	24,300	No	No
Xylene (o-isomer)	95476	Yes	20,000	24,300	No	No
Xylene (m-isomer)	108383	Yes	20,000	24,300	No	No
Xylene (p-isomer)	106423	Yes	20,000	24,300	No	No

The facility-wide TAPs are emitted by the flexographic printing presses (and associated housekeeping (cleaning) operations) on a captured and controlled basis. The Division concurs with the facility's source characterization and associated modeling parameters as stated in Section 3.1 of Attachment D of the permit application. The following table summarizes the SCREEN3 modeled results at an emissions rate of 0.126 g/s.

Table 5: SCREEN 3 Results		
MGLC ($\mu g/m^3$)	**Avg Period**	**Note(s)**
15.06	1-hr	From SCREEN3 Run modeled at 0.126 g/s emissions rate.
19.88	15-min	(15.06)*(1.32)
6.024	24-hr	(15.06)*(0.40)
1.205	Annual	(15.06)*(0.08)

The Division computed the emissions rate which corresponds to the applicable AAC and the results are summarized in the following tables: Note that the Division utilized the following formula for computing the "Emission Rate for the 15-Min STEL", "Emission Rate for the 24-hour AAC", and "Emission Rate for the Annual AAC":

$$C = (A/B)*(0.126\ g/s)$$

Table 6A: 15-Min. Average (STEL) Results						
TAP	A 15-Min STEL (µg/m³)	Based on SCREEN 3 MGLC		Max. Emissions Rate (g/s)		Requires Operation of RTO to Comply?
		B 15-Min STEL (µg/m³)	C Emissions Rate for the 15-Min STEL (g/s)	Uncontrolled	Controlled[2]	
Isopropyl Alcohol	98,000	19.88	621.15	26.98	21.42	No
Propyl Alcohol (n-)	62,500	19.88	396.14	26.98	23.92	No
Propyl Acetate (n-)	105,000	19.88	666.52	7.44	5.92	No
Acetaldehyde	4,500	19.88	28.52	0.29	0.029	No
MDI	20	19.88	0.127	0.29	0.029	Yes

Table 6B: 24-Hour Average Results						
TAP	A 24-hour AAC (µg/m³)	Based on SCREEN 3 MGLC		Max. Emissions Rate (g/s)		Requires Operation of RTO to Comply?
		B 24-hour (µg/m³)	C Emissions Rate for the 24-hr AAC (g/s)	Uncontrolled	Controlled[3]	
Carbon Black	8.30	6.024	0.174	0.23	0.023	Yes
Isopropyl Alcohol (Isopropanol)	2,330	6.024	48.79	26.98	0.60	No
Propyl Alcohol (n-) (Propanol)	1,190	6.024	24.89	29.99	2.999	Yes
Propyl Acetate (n-)	2,000	6.024	41.83	7.44	0.12	No
Titanium Dioxide (Total Dust)	35.7	6.024	0.746	2.61	0.261	Yes

Table 6C: Annual Average Results						
TAP	A Annual AAC (µg/m³)	Based on SCREEN 3 MGLC		Max. Emissions Rate (g/s)		Requires Operation of RTO to Comply?
		B Annual (µg/m³)	C Emissions Rate for the 24-hr AAC (g/s)	Uncontrolled	Controlled[4]	
Acetaldehyde	4.55	1.205	0.476	0.29	0.029	No
MDI	0.60	1.205	0.0627	0.29	0.029	Yes

The Division concurs with the facility's conclusion that the proposed project will comply with the Guideline.

[2] Assuming 90% VOC DRE and 100% capture efficiency.
[3] Assuming 90% VOC DRE and 100% capture efficiency.
[4] Assuming 90% VOC DRE and 100% capture efficiency.

Summary & Recommendations

I recommend the issuance of Permit No. 2759-085-0004-S-03-2 for the construction and operation of a new flexographic press P10. This application also removes press P6 from operation. A public advisory was issued for this application and expired on March 29, 2024, with no comments received. The Mountain District-Cartersville Office will continue to be responsible for compliance at the facility.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//