



ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Jeng-Hon Su
FROM: Eddie Gomez
DATE: July 6, 2022

Facility Name: Pak-Lite, Inc.
AIRS No.: 011-00019
Location: Commerce, GA (Banks County)
Application #: 28373
Date of Application: April 25, 2022

Background Information

Pak-Lite, Inc. (hereinafter “facility”) is a greenfield facility that will be located at Diana Way – Parcel ID – B54 047 Commerce, Georgia 30529 (Banks County). Banks County is in attainment for all criteria pollutants. The facility will manufacture polystyrene foam and polyethylene film as a synthetic minor (SM) facility.

The new facility will consist of three main buildings: one production building, one finished goods storage building, and one raw material storage building. The existing Pak-Lite, Inc. site (PLI) currently operates out of their existing facility in Suwanee, Georgia, which was exempted from permitting. However, once the new facility is built, PLI will be moving their existing expansion line to Commerce. In addition, operations will be expanded.

After the facility moves their equipment to Commerce and expands operations, their volatile organic compound (VOC) potential to emit (PTE) will be greater than 100 tons per year (tpy). To avoid being a major source under Title V of the 1990 Clean Air Act Amendments (CAAA), the facility requested a synthetic minor (SM) limit for VOC emissions. The PTE for all other criteria pollutants and hazardous air pollutants (HAP) will be much below the associated major source thresholds.

Purpose of Application

On April 25, 2022 the facility submitted Application No. 28373 for the construction and operation of a polystyrene foam and polyethylene film manufacturing facility.

Equipment List

The tables below include process emission units of the greenfield facility.

Emission Units			Associated Control Devices	
Source Code	Description	Installation Date	Source Code	Description
EXP01	Expansion Line 1	2022*	--	--
EXP02	Expansion Line 2	2022*	--	--
EXP03	Expansion Line 3	2022*	--	--
EXP04	Expansion Line 4	2022*	--	--
EXT01	Extruder 1	2022*	--	--
EXT02	Extruder 2	2022*	--	--
EXT03	Extruder 3	2022*	--	--
PR01	Printer 1	2022*	--	--

*proposed within current application

Storage Tanks

Source Code	Capacity (gallons)	Contents	Installation Date	True Vapor Pressure (psia)
ES02	550	Diesel	2022*	Unknown

*proposed within current application

Fuel Burning Equipment

Source Code	Input Heat Capacity (MMBtu/hr.)	Description	Installation Date	Construction Date
ES01	1.17	Emergency Fire Pump Engine	2022*	2022

*proposed within current application

Emissions Summary

The VOC emissions from the facility's emergency diesel-fired fire pump engine (ES01) are calculated as follows, assuming the AP-42 lb. VOC/horsepower-hour emission factor applies, all Total Organic Compounds (TOC) count as VOC, and that the facility uses the ES01 for the maximum time a stationary engine is considered an emergency generator, 200 hours per year:

$(0.00247 \text{ lb. VOC/horsepower-hour}) * (460 \text{ horsepower}) * (200 \text{ hours/year}) * (1 \text{ ton}/2000 \text{ lb.}) = 0.114 \text{ tpy VOC.}$

The facility will not add any blowing agents in the polyethylene extrusion lines; therefore, no VOC emissions will be expected. The printer (ID No. PR01), which is associated with Extruder EXT01, will emit a small amount of VOC.

Most VOC emissions will be generated by the four polystyrene foam manufacturing lines. Although the facility does not add any blowing agents into the polystyrene foam, the residual VOC that is contained in the foam when the foam is delivered to the facility will continue to be displaced by the atmospheric air and therefore become airborne. Note that the residual VOC content in the foam reported by the facility is in the vicinity of the residual VOC content of the polystyrene foam that leaves a nearby foam manufacturing facility. Pak-Lite, Inc. used their own lab test results (by comparing the conservative residual VOC content when received and the residual VOC content at the end of the 33-day storage period) and concluded that roughly 3.35% of the total weight of the foam will become VOC emissions. Combined with an assumed annual polystyrene foam throughput rate, the facility estimated that uncontrolled VOC potential-to-emit (PTE) would be 172 tpy.

To avoid being a Title V major source, the facility requested a VOC SM limit. Considering VOC emissions from sources other than the manufacturing process (such as emergency fire pump engine) would be lower than 1 tpy, the Division would subject the entire facility to a 99-tpy VOC emission cap. The facility only needs to track VOC emissions from their manufacturing processes.

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
PM/PM ₁₀ /PM _{2.5}	0	0	0	0	0	0
NO _x	0	0	0	0	0	0
SO ₂	0	0	0	0	0	0
CO	0	0	0	0	0	0
VOC	0	<99	<99	0	<99	<99
Max. Individual HAP	0	0.0015	0.0015	0	0.0015	0.0015
Total HAP	0	0.0015	0.0015	0	0.0015	0.0015
Total GHG (if applicable)	0	0	0	0	0	0

Regulatory Applicability

40 CFR 60 Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

New Source Performance Standards (NSPS) 40 Code of Federal Regulations (CFR) 60 Subpart III specifies standards for applicable engines to reduce Particulate Matter (PM), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and non-methane hydrocarbon (NMCH) emissions.

ES01 is a stationary compression ignition internal combustion engine. ES01 is subject to this regulation. Although an emergency engine is exempted from permitting, the facility is still required to comply with all applicable requirements specified in 40 CFR 60 Subpart III. Most importantly, the facility must purchase an emergency fire pump engine that is certified to comply with the associated emission standards and operate the engine in accordance with the vendor specifications.

40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS 40 CFR 60 Subpart JJJJ specifies standards for applicable engines to reduce NO_x, CO, and VOC emissions.

ES01 is a compression ignition internal combustion engine; therefore, it is not subject to this regulation.

40 CFR 63 Subpart JJJ – National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins

This National Emissions Standard for Hazardous Air Pollutants (NESHAP) applies to production plants that produce thermoplastic products, including those using polystyrene resins which are considered a major source of HAP. While the facility produces polystyrene products, the facility is not a major source of HAP. Therefore, it is not subject to this regulation.

40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The Stationary Reciprocating Internal Combustion Engines (RICE) Maximum Achievable Control Technology (MACT) applies to internal combustion engines operated at a facility that is either a major or area source of HAP emissions.

ES01 is considered a new stationary source under the RICE MACT (installed after June 12, 2006). These sources are required to meet the new source requirements under the RICE MACT by meeting the requirements under 40 CFR 60 Subpart JJJJ or 40 CFR 60 Subpart III. ES01 is subject to this rule and will comply by applying 40 CFR 60 Subpart III.

Georgia Rules for Air Quality Control (GRAQC) 391-3-1-.02(2)(b) – Visible Emissions

The Georgia Visible Emissions Rule states: “Except as may be provided in other more restrictive or specific rules or subdivisions of this Chapter, no person shall cause, let, permit, or allow emissions from any air contaminant source the opacity of which is equal to or greater than forty (40) percent.” This opacity limit applies to direct sources of emissions such as stationary structures, equipment, machinery, stacks, flues, pipes, exhausts, vents, tubes, chimneys, or similar structures.

Because the facility emits air contaminants from exhaust stacks, the facility is subject to this rule. The nature of operations of the expansion lines and extrusion lines are unlikely to generate PM emissions; therefore, compliance with the GA Rule (b) visible emission limit is expected.

GRAQC 391-3-1-.02(2)(e) – Particulate Emissions from Manufacturing Processes

The Georgia Particulate Emissions Rule states that particulate matter from manufacturing processes in operation or under construction after July 2, 1968 is not allowed to emit PM from any of the equipment in quantities equal to or greater than:

- i. $E = 4.1 P^{0.67}$, for process input weight rate up to and including 30 tons per hour.
- ii. $E = 55 P^{0.11} - 40$, for process input weight rate in excess of 30 tons per hour.

Where: E = allowable weight of emissions of PM in pounds per hour, and
P = process weight rate in tons per hour.

The nature of operations of the expansion lines and extrusion lines are unlikely to generate PM emissions; therefore, compliance with the GA Rule (e) PM emission limits is expected.

GRAQC 391-3-1-.02(2)(g) – Sulfur Dioxide

The Georgia Sulfur Dioxide Rule states that all fuel burning sources operating with a heat input of less than 100 MMBtu/hr. shall not burn fuel which contains more than 2.5 percent sulfur by weight.

ES01 is subject to this rule and is expected to comply because it fires exclusively on diesel, and diesel contains no more than 0.5% sulfur.

GRAQC 391-3-1-.02(2)(eee) – VOC Emissions from Expanded Polystyrene Products Manufacturing

The Georgia VOC Emissions from Expanded Polystyrene Products Manufacturing Rule regulates VOC emissions from expandable polystyrene product manufacturing facilities which emit more than 25 tpy of VOC and are within the 13 county Atlanta Ozone non-attainment area or expandable polystyrene product manufacturing facilities which emit more than 100 tpy of VOC and are within Barrow, Bartow, Carrol, Hall, Newton, Spalding, and Walton Counties. Because the facility is in Banks County, this rule does not apply.

GRAQC 391-3-1-.03(6)(b)13 – Firefighting Equipment

GA Rule 391-3-1-.03(6)(b)13. exempts emergency fire pump engines from permitting. Although the exemption may be nulled by the fact that ES01 is subject to NSPS Subpart IIII and NESHAP Subpart ZZZZ, it is the Division's general practice that the emergency fire pump engines are not included in permits.

Permit Conditions

As discussed above, Condition 2.1 limits facility-wide VOC emissions to below 99 tpy. The limit allows one ton of VOC emissions from sources other than the manufacturing processes. Thus, the facility will be a minor source under Title V of the 1990 Clean Air Act Amendments (CAAA).

Condition 2.2 restricts opacity to 40 percent per the GA Rule (b) visible emission standard.

Condition 2.3 includes the GA Rule (e) particulate emission standards for all manufacturing processes.

Condition 7.1 requires that the facility submit written notification to the Division within 15 days after its initial startup.

Condition 7.2 requires the facility to maintain monthly records of the amount of polystyrene foam processed at all the expansion lines in tons for enforcement of Condition 7.3.

Condition 7.3 includes the methodologies how the facility must track their VOC emissions from the polystyrene foam expansion lines and from the other processes. For the polystyrene foam expansion lines, about 3.35% of the foam weight (the majority of the residual blown agents inside the foam) will become VOC emissions. For the other processes, mass balance must be used to track VOC emissions.

Condition 7.4 requires that the facility calculate monthly total VOC emissions using records obtained in accordance with Conditions 7.3a. and b. If any such record equals or exceeds 8.25 tons, the facility must notify the Division and explain how they intend to attain future compliance with the VOC synthetic minor limit specified in Condition 2.1.

Condition 7.5 requires that the facility calculate 12 consecutive month total VOC emissions using records obtained in accordance with Condition 7.4. If any such record equals or exceeds 99 tons, the facility must notify the Division and explain how they intend to attain future compliance with the VOC synthetic minor limit specified in Condition 2.1.

Because the facility is predicted to be a synthetic minor source, it will be subject to a flat SM permit fee. Condition 8.2 includes this fee requirement.

Toxic Impact Assessment

As demonstrated in the tables below, the emissions of toxic air pollutants (TAP) are below all applicable minimum emission rates (MER).

Summary of Maximum HAP/TAP Emission PTE			
Emission Units	Propane tpy^T	Titanium dioxide tpy^T	4,4'- Methylenediphenyl Diisocyanate (MDI) tpy^{T, H}
EXP01 – EXP04 Expansion Lines	88.4	--	0.0015
PR01 – Printer	--	0.05	--
Emission Totals	88.4	0.05	0.0015

T = Georgia TAP, H = Federal HAP

MER Comparison	Propane	Titanium dioxide	4,4' - MDI
Georgia MERs tpy	104.3	0.869	0.073
Pak-Lite HAP/TAP Uncontrolled PTE tpy	88.4	0.05	0.0015
Do Pak-Lite emissions exceed MERs?	No	No	No

Summary & Recommendations

I recommend that Permit No. 3086-011-0019-S-01-0 be issued to the facility. A Public Advisory was issued on May 4, 2022 and comments were due by June 3, 2022, no comments were received. The Stationary Source Compliance Program (SSCP) is responsible for inspections and complaints/investigations.