GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

NARRATIVE

TO: Jeng-Hon Su

FROM: Dawn Wu

DATE: December 22, 2022

Facility Name:	**Ecoplastic America Corp.**
AIRS No.:	031-00065
Location:	Statesboro, GA (Bulloch County)
Application #:	28635
Date of Application:	November 25, 2022

Background Information

Ecoplastic America Corp. (hereinafter, "facility") is a greenfield facility that will manufacture plastic automobile parts (primarily bumpers) in Statesboro, Georgia. The facility will be located in Bulloch County, which is in attainment with all criteria air pollutant NAAQS. The facility is requesting a "synthetic minor" permit for volatile organic compounds (VOC) and hazardous air pollutant (HAP) emissions.

Processes at the proposed facility will consist of plastic injection molding to form the vehicle parts, followed by surface treatment of the parts in preparation for painting. The painting line will consist of a primer spray booth, basecoat booth, and clearcoat booth, followed by a paint curing oven. Flash off areas will be located after the primer and basecoat booths. The paint line will be equipped with a natural gas-fired RTO to ensure compliance with major source avoidance limits for VOC and HAP.

Plastic Injection Molding
Plastic resin beads will be heated and injection molded into parts shapes. A small amount of mold release agent will be used. Plastic injection molding is exempt from air permitting in accordance with Rule 391-3-1-.03(6)(h)13 and will have small amounts of VOC and PM emissions. These emissions are estimated and included in the plantwide totals.

Surface Preparation
The parts will be sanded and polished. A small amount of liquid polish will be used. The parts will undergo a plasma flame and CO_2 surface treatment to make the part surface more suitable for paint adhesion. PM emissions from sanding, VOC emissions from polishing, and products of combustion from plasma flame treatment will be minimal. These emissions are estimated and included in the plantwide totals.

Surface Coating
The surface coating line will comprise a primer booth (PB1), basecoat booth (BB1), and clearcoat booth (CB1). A paint curing oven (CO1) will provide final paint drying after the clearcoat booth. The booths will use robotic spray application, and flash off areas will be located after the primer and basecoat booths. Solvent-based coatings will be used, and paint gun purging operations will occur in each booth. Booth exhaust will be cleaned with water curtains prior to being partially recycled back into the booths to ensure product quality and prevent fouling of the RTO. The water curtains to clean the paint booth exhaust are integral to the process because neither the paint booths nor the RTO can operate properly without these water curtains being operated to preserve production quality and RTO operation. All exhaust from the painting operations will be routed to the plant RTO.

Natural Gas Combustion Sources
The facility will utilize various natural gas-fired equipment (external combustion), including a boiler, RTO, and air-handling units (AHUs), and space heaters serving as comfort heating systems.

Purpose of Application

On November 29, 2022, Ecoplastic America Corp. submitted application No. 28635 for the construction and operation of a plastic automobile parts manufacturing and surface coating facility. A public advisory was issued on November 30, 2022 and expired on December 30, 2022. The facility is seeking a synthetic minor permit, and therefore a 30-day public comment period is issued on any such draft SM permit.

Equipment List

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
INJ	Injection molding	2023	--	--
NGC	Natural gas combustion, small boiler, air handling units, RTO, etc. These are miscellaneous with no individual unit exceeding 10MMBtu/hr. Total capacity ~ 28 mmbtu/hr	2023	--	--
PREP	Surface Preparation, including sanding, polishing, CO2 treatment, flame treatment	2023	--	--
PB1	Primer booth with flashoff area	2023	WC	water curtains
			RTO	Thermal Oxidizer
BB1	Base coat booth with flashoff area	2023	WC	water curtains
			RTO	Thermal Oxidizer
CB1	Clearcoat booth	2023	WC	water curtains
			RTO	Thermal Oxidizer
CB01	Paint Curing Oven	2023	RTO	Thermal Oxidizer

Fuel Burning Sources

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
PF	0.22	Plasma Flame (2@ 0.11 MMBtu/hr each)	2023	2023
AHU	10.66	Air Handling Units (2 @ 5.33 MMbtu/hr each)	2023	2023
B1	2.37	Natural gas fired boiler	2023	2023
RTO	5.54	Regenerative thermal oxidizer burner	2023	2023
IMH	0.08	Injection Machine heaters (4 @ 0.02 MMbtu/hr each)	2023	2023
SH	9.12	Space Heaters (24 @ 0.38 MMbtu/hr each)	2023	2023

Emissions Summary

Emissions from the injection molding and surface preparation are minimal (less than 1 tpy VOC and 1 tpy PM). Emissions from the natural gas burning sources were estimated using AP-42 Section 1.4 natural gas external combustion emission factors. VOC, HAP, and PM emissions will result from the painting operation. The potential uncontrolled emissions from the painting line (3 booths and paint curing oven) are 958 tpy VOC, and 555 tpy HAP, with xylene being the greatest-emitted HAP at 265 tpy. Emissions are estimated based on estimated hourly production rates, the amount of paint used per part, and VOC/HAP content provided by the paint supplier. Emissions from purging are estimated conservatively assuming that all purge solvent will be emitted in the paint booth, however in reality a large portion of the purge solvent will be captured and shipped out. Particulate matter emissions from the painting are estimated including the control from water curtain filters which the facility deems as integral to the process because a portion of each paint booth's exhaust is recycled and used as inlet air for the booths. The exhaust air must be cleaned as part of the process in order to ensure paint quality (recycling booth air containing overspray will damage paint quality.) In addition, the exhaust air must be cleaned prior to sending to the RTO to prevent fouling.

The facility will use an RTO to control VOC and HAP emissions to ensure that actual plantwide annual emissions are less than 100 tpy VOC and 10/25 tpy HAP.

The following emissions tables were provided by the facility in the application and break down the potential uncontrolled and controlled emissions by process. Note that the VOC and HAP emitted from mold release agent in the injection molding, and liquid polish in the surface preparation are included in the Material Usage row, along with paints and thinners. Furthermore, all products of combustion from boilers, RTO, surface preparation, etc. are included in the Natural Gas Combustion row.

Emission Source	Potential Uncontrolled Emissions (tons per year)						
	VOC	Total HAP	Single HAP	$PM/PM_{10}/PM_{2.5}$	NO_x	CO	SO_2
Material Usage	958.29	555.48	264.82				
Natural Gas Combustion	0.66	0.23		0.91	12.02	10.10	0.07
Paint Booth Solids				6.42			
Plastic Injection Molding	0.73			0.21			
Total	**959.7**	**555.7**	**264.8**	**7.5**	**12.0**	**10.1**	**0.1**

Emission Source	Potential Controlled Emissions (tons per year)						
	VOC	Total HAP	Single HAP	$PM/PM_{10}/PM_{2.5}$	NO_x	CO	SO_2
Material Usage	48.38	27.77	13.24				
Natural Gas Combustion	0.66	0.23		0.91	12.02	10.10	0.07
Paint Booth Solids				6.42			
Plastic Injection Molding	0.73			0.21			
Total	**< 100**	**< 25**	**< 10**	**7.5**	**12.0**	**10.1**	**0.1**

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions	Actual Emissions
$PM/PM_{10}/PM_{2.5}$	7.5	<7.5
NOx	12.0	<12.0
SO_2	0.1	<0.1
CO	10.1	<10.1
VOC	<100	<100
Max. Individual HAP (Xylene)	<10	<10
Total HAP	<25	<25
Total GHG (if applicable)	3,276	<3,276

Regulatory Applicability

The proposed facility is not subject to any Georgia VOC RACT standards because the potential VOC (after RTO controls, to ensure SM status) is less than 100 tpy and is located outside the metro Atlanta area that has VOC rule thresholds below 100 tpy. For example, Georgia Rule (vvv) "coating of plastic parts" only applies in the 13-county metro Atlanta area (but also never became effective).

No NSPS apply to the fuel burning sources, or to the surface coating operations. For example, NSPS Dc applies to steam generating units with capacities between 10 MMBtu/hr and 100 MMBtu/hr; none of the fuel burning source have capacities approaching 10 MMBtu/hr. NSPS Subpart TTT does not apply because that rule applies only to parts for business machines, not automobile parts.

No major source NESHAP (including 40 CFR 63 PPPP – Plastic Parts Coating) apply to the facility because the potential HAP (after control, to ensure SM status) is less than 10/25 tpy. No fuel burning equipment defined as a gas-fired boiler is subject to 40 CFR 63 JJJJJJ.

No Area source NESHAP apply. The facility is not subject to "GACT" 40 CFR 63 HHHHHH because the paints used do not contain any of the "target HAP" in concentrations triggering applicability.

Georgia Rule 391-3-1-.02(2)(b), Visible Emissions

Georgia Rule (b) limits the visible emissions from all manufacturing processes not to exceed 40% opacity. PM emissions from the surface coating operations are controlled by water curtain systems which are inherent to the booths to allow for recycling of booth air, and to prevent fouling of the RTO. Therefore, visible emissions are expected to comply with Georgia Rule (b).

Georgia Rule 391-3-1-.02(2)(d), Fuel-Burning Equipment

Georgia Rule (d) limits the emission of fly ash and other particulate matter from fuel burning equipment. The fuel burning equipment identified in the application is exempt from permitting, but technically is still subject to Rule (d). Since the boiler will only burn natural gas, it is always expected to comply with the rate and opacity limits of Georgia Rule (d).

Georgia Rule 391-3-1-.02(2)(e), Particulate Matter Emissions from Manufacturing Processes

Georgia Rule (e) limits particulate matter emissions based on process input weight rate. Because PM emissions from the surface coating operations are controlled by inherent water curtain and the RTO, PM emissions are expected to comply with Georgia Rule (e) limits.

Georgia Rule 391-3-1-.02(2)(g), Sulfur Dioxide

Because all fuel burning equipment will burn natural gas exclusively, the facility will inherently comply with the 2.5% sulfur content limit of this rule.

Permit Conditions

Condition 2.1 limits VOC emissions from the facility (except natural gas combustion and injection molding) to 98 tpy for Title V avoidance. Potential VOC emissions from natural gas combustion and plastic injection molding combined are less than 2 tpy. Therefore, this limit applies to the coating line, and mold release agent, and liquid polish usage. This will ensure that facility wide emissions remain below 100 tpy, but simplifies VOC usage and emissions tracking. It also allows for minor additions of natural gas sources provided the PTE remains less than 2 tpy total.

Condition 2.2 limits HAP emissions from the facility (except natural gas combustion and injection molding) to 9.5/24 tpy for Title V avoidance. Potential HAP emissions from natural gas combustion and plastic injection molding combined are less than 0.5 tpy single HAP and 1 tpy combined HAP. Therefore, this limit applies to the coating line, and mold release agent and liquid polish usage. This will ensure that facility wide emissions remain below 10/25 tpy HAP, but simplifies HAP usage and emissions tracking.

Condition 2.3 establishes Georgia Rule (b).

Condition 2.4 establishes Georgia Rule (d) PM limits and opacity limits.

Condition 2.5 establishes Georgia Rule (e).

Condition 2.6 subsumes Georgia Rule (g) and limits fuel combusted to natural gas in the external combustion units. The plant is not expected to have any emergency generator or fire pump (which usually burn diesel), but this condition would not preclude such a permit-exempt engine to be added in the future as NPR (provided that PTE remains below 100 tpy VOC and HAP remains below 10/25 tpy). Note that the fuel restriction will make the boiler a gas-fired boiler and is therefore not subject to 40 CFR 63 Subpart JJJJJJ.

Condition 2.7 establishes Georgia Rule (n).

Condition 4.1 requires the facility to perform routine maintenance on all air pollution control equipment

Condition 4.2 requires the facility to always operate the RTO whenever the surface coating operation is operating, except during maintenance and malfunction periods. This allows some flexibility because the RTO is not needed to comply with any short-term limits, and is not needed to comply with the TIA (because all TAP are below the MER if VOC emissions remain below 100 tpy.

Condition 4.3 requires the facility to ensure that the paint booths will operate with 100% capture.

Condition 5.1a. requires the facility to continuously monitor and record RTO temperature

Condition 5.1b. requires the facility to monitor and record the differential pressure across each paint spray booth water curtain on a weekly basis. This will ensure proper operation to both minimize PM emissions and keep the RTO in proper working order.

Condition 5.1c. requires monthly inspections of the booth enclosure to ensure that proper capture is maintained. Corrective action must be taken if problems are identified.

Condition 5.2 requires that the facility develop and implement a Preventive Maintenance Program (PMP) for the regenerative thermal oxidizer (ID No. RTO).

Condition 6.2 requires initial VOC destruction testing on the RTO within 120 days after startup, with follow up testing every 60 months. The facility must establish the minimum RTO combustion zone temperature using data recorded during the tests.

Condition 7.1 requires the facility to submit written notification of startup to the Division within 15 days after such date.

Condition 7.2 requires the facility to record periods when the RTO is not in operation and 3-hr rolling average RTO combustion zone average temperature data.

Condition 7.3 requires VOC usage records for the painting line (paints/thinners), mold release agent, and liquid polish (and any other material likely to evaporate and emit VOC). The facility has noted that most of the thinner used for purging will be shipped offsite instead of released/evaporated into the paint booths.

Condition 7.4 requires the facility to calculate monthly VOC emissions from painting, mold release agent, and liquid polish to determine emissions. If the RTO is down, or the temperature is not meeting the minimum temperature requirement, zero DRE must be used. If any monthly total is more than 8.16 tons,

the facility must notify the Division with 15 days of the following month. This notification is required in order to help the facility to plan ahead and stay below the annual VOC emission limit.

Condition 7.5 requires the facility to use the monthly calculations from Condition 7.4 to determine the 12 month rolling VOC emissions, and to notify the division if the total exceeds 98 tons (from all but natural gas combustion and injection molding) during any 12-consecutive month period.

Condition 7.6 requires HAP usage records for the painting line (paints/thinners), mold release agent, and liquid polish (and any other material likely to evaporate and emit HAP). The facility has noted that most of the thinner used for purging will be shipped offsite instead of released/evaporated into the paint booths.

Condition 7.7 requires the facility to calculate monthly HAP emissions from painting, mold release agent, and liquid polish to determine emissions. If the RTO is down, or the temperature is not meeting the minimum temperature requirement, zero DRE must be used. Any monthly totals exceeding 0.79 ton for any individual HAP or 2.0 tons for combined HAP are required to be reported to the Division.

Condition 7.8 requires the facility to use the monthly calculations from Condition 7.5 to determine the 12 month rolling HAP emissions, and to notify the division if the total exceeds 9.5/24 tons (from all but natural gas combustion and injection molding) during any 12-consecutive month period.

Toxic Impact Assessment

The facility performed a toxic impact assessment (TIA) to demonstrate compliance with Georgia Air Toxic Guidelines. TAP emissions from all sources at the facility, including natural gas combustion and material usage (paint, thinner, polish, mold release agent) were assessed. TAP emissions, scaled to a VOC emission rate of 100 tpy (SM limit), and limited to 20,000 lb (10 tpy HAP limit) for HAP-TAPs, were compared with their respective minimum emission rates (MER). All TAPs were below their respective MER, and therefore no modeling was required.

TAP	PTE Material Usage (lb/yr)	PTE Combustion (lb/yr)	Total PTE (lb/yr)	MER (lb/yr)	BELOW MER?
Xylenes	2.00E+04		2.00E+04	2.43E+04	Yes
Ethyl Benzene	1.05E+04		1.05E+04	2.43E+05	Yes
MIBK	2.02E+03		2.02E+03	4.53E+05	Yes
Cumene	3.31E+02		3.31E+02	9.73E+04	Yes
Methanol	1,66E+03		1,66E+03	3.01E+04	Yes
Toluene	2.00E+04	8.2E-01	2.00E+04	1.22E+06	Yes
N-Butyl Acetate	1.97E+04		1.97E+04	8.23E+04	Yes
Isobutanol	7.06E+01		7.06E+01	3.48E+04	Yes
Proplyene Glycol Monomethyl Ether	1.56E+03		1.56E+03	4.87E+05	Yes
Ethanol	2.61E+01		2.61E+01	2.19E+05	Yes
Ethyl Acetate	3.30E+03		3.30E+03	1.62E+05	Yes
Heptane	4.64E+03		4.64E+03	2.32E+05	Yes
MEK	5.25E+03		5.25E+03	1.22E+06	Yes
Cyclohexane	3.31E+02		3.31E+02	1.46E+06	Yes
Diisobutyl Ketone	2.24E+03		2.24E+03	3.36E+04	Yes

TAP	PTE Material Usage (lb/yr)	PTE Combustion (lb/yr)	Total PTE (lb/yr)	MER (lb/yr)	BELOW MER?
MAK	4.49E+03		4.49E+03	5.39E+04	Yes
Ethylene Glycol Monobutyl Ether	4.41E+02		4.41E+02	3.16E+06	Yes
Glycerin	3.99E+02		3.99E+02	5.79E+02	Yes
Acetone	8.03E+03		8.03E+03	2.78E+05	Yes
Benzene		5.00E-01	5.00E-01	3.16E+01	Yes
Dichlorobenzene		2.90E-01	2.90E-01	1.95E+05	Yes
Formaldehyde		1.80E+01	1.80E+01	2.67E+02	Yes
Hexane, n-		4.33E+02	4.33E+02	1.70E+05	Yes
Naphthalene		1.50E-01	1.50E-01	7.30E+02	Yes
Arsenic		5.00E-02	5.00E-02	5.67E-02	Yes
Beryllium		0.00E+00	0.00E+00	9.70E-01	Yes
Cadmium		2.60E-01	2.60E-01	1.35E+00	Yes
Chromium		3.40E-01	3.40E-01	2.43E+01	Yes
Cobalt		2.00E-02	2.00E-02	1.17E+01	Yes
Lead		1.20E-01	1.20E-01	5.84E+00	Yes
Manganese		9.00E-02	9.00E-02	1.22E+01	Yes
Mercury		6.00E-02	6.00E-02	7.30E+01	Yes
Nickel		5.00E-01	5.00E-01	3.86E+01	Yes
Selenium		1.00E-02	1.00E-02	2.34E+01	Yes
Pentane		6.25E+02	6.25E+02	3.42E+05	Yes
Propane		3.85E+02	3.85E+02	2.09E+05	Yes
Barium		1.06E+00	1.06E+00	5.79E+01	Yes
Copper		2.00E-01	2.00E-01	1.17E+02	Yes
Molybdenum		2.60E-01	2.60E-01	1.74E+03	Yes

Summary & Recommendations

Ecoplastic America Corp. is a manufacturer of plastic automotive parts, to be located in Statesboro, Bulloch County. The facility will operate with controls and limitations for VOC, and single/combined HAP emissions and will therefore be considered a synthetic minor source. The Stationary Source Compliance Program (SSCP) will be responsible for compliance and inspection of this facility.

I recommend the issuance of Permit No. 3714-031-0065-S-01-0 to Ecoplastic America Corp. The Public Advisory for this application expired on December 30, 2022. No comments were received.

The application underwent a 30-day Public Notice period that expired on _____, 2023.