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ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Jeng-Hon Su

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DATE: August 4, 2022

Facility Name:	**Ecopol America Inc. - Griffin Facility**
AIRS No.:	255-00078
Location:	Griffin, GA (Spalding County)
Application #:	28505
Date of Application:	June 6, 2022

Background Information

Ecopol America Inc. - Griffin Facility (hereinafter "facility") intends to construct and operate a biodegradable water-soluble film production facility located at the Lakes at Green Valley Industrial Park Lot E in Griffin, Spalding County, Georgia.

At the facility, chemicals will be stored on-site and arrive via truck. Production for the site begins with the mixing process, performed by two (2) turbomixers. The main chemical used in this process is polyvinyl alcohol (PVOH), which is introduced to the mixers within the first stage. The machine then mixes the compound at various speeds for a defined time. The transition to the second stage occurs automatically and processes the compound with a stabilizing mixture, which is then sent to three (3) pelletizing systems which heat and extrude the mixture for blown film processing. Following this process, the material is passed through a blown film extruder which creates the film and sends the product to a slitter that cuts the film. Control of volatile organic compounds (VOC) and hazardous air pollutants (HAP) emissions for the processes is provided by three (3) scrubbers (one for each process) with a conservatively assumed 90% control efficiency. Ecopol also utilizes one (1) baghouse for control of particulate matter (PM) emissions from the mixers, with the exhaust of the baghouse routed to the respective scrubber for the process. The final step in the manufacturing process involves winding of the film into rolls via a winder.

Several processes will be considered ancillary activities. The main chemical storage vessels involved in this process are for PVOH, and other chemicals involved in formation of the biodegradable film. The potential emissions calculations are based on the potential chemical usage.

The facility will have multiple storage tanks both inside and outside of the main manufacturing building. There will be two (2) 22,000 lb Polyvol storage tanks, and one (1) 52,000 lb Polyvol storage tank located at the facility. Multiple smaller tanks will be located inside the facility that are used during the dosing stage.

Five (5) storage silos located outside of the main production building will contain PVOH. Loading and unloading of the silos will be a source of particulate matter (PM) at the facility. Potential emissions are based upon maximum amount stored in each silo.

The Griffin facility will have twelve (12) natural gas combustion units, nine (9) of which will be used to provide assistance for the Air Handling Unit (AHU), two (2) that will be used as water heaters, and one (1) that will be used as a hot water (HW) boiler. The units providing assistance for the AHU have a combined heat input rate of 17.76 MMBtu/hr. The water heaters and HW boiler have heat input rates of 0.41 MMBtu/hr and 3.57 MMBtu/hr, respectively. The total heat input rate for all natural gas combustion units at the facility is 21.74 MMBtu/hr. The potential emissions calculations are based on AP-42 emission factors for natural gas combustion. All units are categorically exempt from construction permitting.

Purpose of Application

On July 14, 2022, Ecopol America Inc. - Griffin Facility submitted an application requesting the construction and operation of a biodegradable water-soluble film production facility. The Public Advisory started on July 20, 2022 and expired on August 19, 2022.

Updated Equipment List

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
EU01*	Electric powered 350kW chemical turbomixer No. 1	2022	BH1*	Baghouse
			SC1*	Scrubber
EU02*	Electric powered 350kW chemical turbomixer No. 2	2022	BH1*	Baghouse
			SC1*	Scrubber
EU03*	Electric powered Online Extruder and Pelletizing system	2022	SC2*	Scrubber
EU04*	Electric powered Granulator Line	2022	n/a	n/a
EU05*	Electric powered Blown Film Extruder	2022	SC3*	Scrubber
EU06*	PVOH Storage Silos	2022	n/a	n/a

*Proposed within current application

Fuel Burning Sources

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
AHU*	17.76	Nine (9) natural gas fired air handling units	2022	2022
WH*	0.41	Two (2) natural gas fired water heaters	2022	2022
HW*	3.57	One (1) natural gas fired hot water boiler	2022	2022

*Proposed within current application

Emissions Summary

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions	Actual Emissions
$PM/PM_{10}/PM_{2.5}$	14.48/14.57/14.48 (with control)	14.48/14.57/14.48 (with control)

Pollutant	Potential Emissions	Actual Emissions
NOx	9.33	9.33
SO_2	0.06	0.06
CO	7.84	7.84
VOC	<100	<100
Max. Individual HAP	<10	<10
Total HAP	<25	<25
Total GHG (if applicable)	11,300	11,300

Note that the annual VOC emission rates in Table 7 of the application has been corrected to 7.31 tons per year (tpy). The facility-wide VOC potential-to-emit (PTE) has been updated to 9.17 tpy, while the facility-wide combined HAP PTE is 1.48 tpy. The Division is not certain how the potential throughput and potential chemical usage was estimated; based on the facility's request, the permit will include a facility-wide VOC synthetic minor limit. Since the facility will not be required to track VOC emissions from the fuel burning sources (which will be up to 0.5 tpy), the Division decided to add a 99-tpy VOC emission cap in the permit.

Since the majority of the VOC is in the form of PVOH (the facility used the CAS number for methanol for this compound), the HAP emissions have a potential to exceed 10 tpy for single HAP and 25 tpy for combined HAP. Thus, the Division decided to add a 10-tpy single HAP cap and a 24.8-tpy combined HAP (fuel burning sources can emit up to 0.18 tpy combined HAP) in the permit.

PM emissions were primarily released from the turbomixers. Potential PM emissions from Turbomixers EU01 and EU02 were estimated using the vendor guaranteed exit grain loading data for Baghouse BH1. Although scrubbers targets controlling VOC emissions, they also help reduce PM emissions. Thus, the estimated PM PTE without considering the scrubber PM removal efficiency is conservative. Without these add-on controls, the facility will have a PM potential-to-emit (PTE) greater than 100 tpy. Therefore, operating the add-on controls at all times when the associated emission units are in operation is the synthetic minor limit for PM.

Regulatory Applicability

Georgia Rule 391-3-1-.02(2)(b) – Visible Emissions. This regulation limits the opacity from all sources to 40%, provided that the source is not subject to some other emission limitation under Georgia Rule 391-3-1-.02(2). This regulation is applicable to operations at the facility, including the air handling units and their combustion sources.

The water heater and hot water boiler, however, are subject to another opacity limit under Georgia Rule 391-3-1-.02(2)(d). The fuel burning equipment is also subject to the GA Rule (d) PM emission limit. Since they fire exclusively on natural gas, and natural gas is considered as a clean fuel, compliance is expected.

Georgia Rule 391-3-1-.02(2)(e) – Particulate Matter Emissions from Manufacturing Processes. This regulation establishes PM limits for all sources if not specified elsewhere. The regulation applies to the raw material and pellets processing and handling systems.

Georgia Rule 391-3-1-.02(2)(g) – Sulfur Dioxide. This regulation establishes SO_2 emission limits for fuel-burning sources. The proposed natural gas combustion units all have a capacity less than 100 MMBtu/hr and are subject to a fuel sulfur content limit of 2.5% by weight.

Georgia Rule 391-3-1-.02(2)(n) – Fugitive Dust. This regulation requires facilities to take reasonable precautions to prevent fugitive dust from becoming airborne. Operations at the facility involving pellets handling and storage systems, are covered by this generally applicable rule. The appropriate precautions will be taken to prevent fugitive dust from becoming airborne and ensure that opacity from fugitive dust sources is less than 20% as required by this rule.

40 CFR 60 Subpart Dc – Small Steam Generating Units. NSPS Subpart Dc applies to steam generating units for which construction commenced after June 9, 1989, with a heat input capacity between 10 MMBtu/hr and 100 MMBtu/hr. The proposed HW boiler and water heater are both less than 10 MMBtu/hr, therefore, they are not subject to Subpart Dc. Additionally, the AHUs are not steam generating units, and therefore not subject to Subpart Dc.

40 CFR 60 Subpart Kb – Volatile Organic Liquid Storage Vessels. NSPS Subpart Kb regulates storage vessels with a capacity greater than 75 cubic meters (m^3) (19,813 gallons) that are used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. Subpart Kb has provisions in §60.110b(b) to exempt tanks based on size and the maximum true vapor pressure of the material stored. Specifically, Subpart Kb "does not apply to storage vessels with a capacity greater than or equal to 151 m^3 [39,890 gallons] storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 [19,813 gallons] but less than 151 m^3 [39,890 gallons] storing a liquid with a maximum true vapor pressure less than 15.0 kPa." The chemicals (Polyvol) stored (in tanks larger than 19,813 gallons) at the Griffin facility will have a maximum true vapor pressure less than 3.5 kPa. Therefore, the storage tanks are not subject to Subpart Kb.

40 CFR 63 Subpart JJJJJJ – Area Source Industrial Boilers. NESHAP Subpart JJJJJJ establishes compliance requirements for industrial, commercial, or institutional boilers located at, or is part of, an area source of HAP. Per 40 CFR 63.11194(a), an affected source is the collection of all industrial, commercial, and institutional boilers within a subcategory, as listed in 40 CFR 63.11200 and defined in 40 CFR 63.11237. Per 40 CFR 63.11195(e), gas boilers are not subject to this subpart. The Griffin facility is therefore exempt from all requirements of this subpart, due to the HW boiler being natural gas fired. The 0.41-MMBtu/hr water heater meets the definition of a "hot water heater" in 40 CFR 63.11237, and therefore, per 40 CFR 63.11195(f), is not subject to 40 CFR 63 Subpart JJJJJJ.

Permit Conditions

The following conditions contain the synthetic minor emission caps/limits.

- Condition 2.1 states a 99-ton per year facility-wide VOC limit for Title V Avoidance.
- Condition 2.2 states a 10/24.8-ton per year HAP limit for MACT Avoidance.
- Condition 2.3 requires the operation of all add-on controls at all times when the associated emission units are in operation. The scrubbers will be used to control VOC and HAP emissions from the Biodegradable Water-Soluble Film Production process. The baghouse will be used to control PM emissions.

Condition 2.4 states the requirements of Georgia Rule (b).

Condition 2.5 states the requirements of Georgia Rule (d).

Condition 2.6 sates the requirements of Georgia Rule (e).

Condition 2.7 states the requirements of Georgia Rule (g). Note the fuel specification helps the HW boiler to avoid being subject to 40 CFR 63 Subpart JJJJJJ.

Condition 2.8 subjects the facility to Georgia Rule (n).

Condition 4.2 requires that the facility maintains sufficient baghouse filter bags.

Condition 5.1 is the monitoring requirements for the baghouse. The current after-control PM PTE provided in the application is much lower than 100 tpy, a short term exceedance (meaning emissions not being controlled) is unlikely to immediately jeopardize the SM status. The actual PM emissions should be much lower than 100 tpy. Therefore, the monitoring frequency has been set to once per week.

Condition 5.2 is the monitoring requirements for the scrubbers. the current after-control VOC PTE provided in the application is much lower than 100 tpy, a short term exceedance (meaning emissions not being controlled) is unlikely to immediately jeopardize the SM status. The actual VOC emissions should be much lower than 100 tpy. Therefore, the monitoring frequency has been set to once per week.

The Division has determined that no performance test is needed for the facility with the following reasons:

- PM
  As discussed previously, PM emissions primarily came from the turbomixers. Without considering the control of the downstream scrubber, the facility used a vendor guaranteed exit grain loading (0.01 gr/dscf) for the upstream baghouse. The data seems in line with other baghouses. In addition, the after-control PM PTE is much below the major source threshold. With these reasons, the Division has determined that no testing is needed.

- VOC
  Since methanol is miscible (mixes completely) in water, a 90-percent control efficiency of a packed tower scrubber is a very reasonable assumption. Since the facility-wide VOC PTE presented in the application is much lower than 100 tpy, the Division has determined that no testing is needed.

Condition 7.1 requires the facility submits written notification to the Division within 15 days after the startup.

Conditions 7.2 through 7.4 require the facility to keep records of all VOC contain materials and calculate the monthly VOC emissions and the 12-month rolling totals. These conditions also require prompt reporting of any monthly or 12-month exceedance.

Conditions 7.5 through 7.7 require the facility to keep records of all HAP contain materials and calculate the monthly HAP emissions and the 12-month rolling totals. These conditions also require prompt reporting of any monthly or 12-month exceedance.

Toxic Impact Assessment

A TIA was performed in accordance with the Guideline. Section 2.2 of the Guideline requires a comparison between the facility-wide emission rate and the MER. For a pollutant that has a facility-wide emission rate above the MER, the Guideline requires the use of screening model (SCREEN3) or refined models (AERMOD or ISCST3) to determine the maximum ground level concentrations for TAP.

The facility evaluated emissions of PVOH (Methyl Alcohol), formaldehyde, and acetaldehyde from the production process. Additionally, the facility evaluated emissions of various TAPs associated with the proposed combustion units. Facility-wide emission rates are compared to the MER for the identified TAP, as identified in Table 1. None of the TAP total annual emissions are greater than the MERs, no adverse impact is presumed, and no further analysis is required.

Table 1 Summary of maximum annual TAP emissions in comparison to MER.

Toxic Air Pollutant	Blown Film Extrusion Emissions (lb/yr)	Polymer Process Emissions (lb/yr)	Natural Gas Combustion Emissions (lb/yr)	Total Emissions (lb/yr)	MER (lb/yr)
PVOH	-	2.61E+02	-	2.61E+02	3.01E+04
Formaldehyde	7.07E-01	-	1.40E+01	1.47E+01	2.67E+02
Acetaldehyde	4.60E-01	-	-	4.60E-01	1.11E+03
Benzene	-	-	3.92E-01	3.92E-01	3.16E+01
Naphthalene	-	-	1.14E-01	1.14E-01	7.30E+02
Toluene	-	-	6.35E-01	6.35E-01	1.22E+06
Arsenic	-	-	3.73E-02	3.73E-02	5.67E-02
Beryllium	-	-	2.24E-03	2.24E-03	9.73E-01
Cadmium	-	-	2.05E-01	2.05E-01	1.35E+00
Chromium VI	-	-	1.04E-02*	1.04E-02*	1.95E-02
Cobalt	-	-	1.57E-02	1.57E-02	1.17E+01
Lead	-	-	9.33E-02	9.33E-02	5.84E+00
Manganese	-	-	7.09E-02	7.09E-02	1.22E+01
Mercury	-	-	4.85E-02	4.85E-02	7.30E+01
Nickel	-	-	3.92E-01	3.92E-01	3.86E+01
Hexane	-	-	3.36E+02	3.36E+02	1.70E+05

*EPA AP-42 emission factors for natural gas combustion include total Cr but not Cr (VI). As part of the 2011 and previous National Air Toxics Assessments (NATA), EPA assumes that 4% of total chromium produced from natural gas combustion is in the hexavalent form.

Summary & Recommendations

Ecopol America Inc. - Griffin Facility is considered a synthetic minor source due to proposed Conditions 2.1 through 2.3. The Public Advisory expired on August 19, 2022. No comments were received. As a synthetic minor source, compliance responsibility is assigned to SSCP. I recommend issuance of Air Permit No. 3081-255-0078-S-01-0 to Ecopol America Inc. - Griffin Facility.