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NARRATIVE

TO: Jeng-Hon Su

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DATE: October 17, 2022

Facility Name:	**Porex Filtration Group**
AIRS No.:	04-13-121-00256
Location:	Fairburn, GA (Fulton County)
Application #:	28589
Date of Application:	October 13, 2022

Background Information

Porex Filtration Group (hereinafter "facility") operates a facility for the manufacture of porous plastic products at 500 Bohannon Road in Fairburn, Georgia. The facility is located in Fulton County, which is a non-attainment area for ozone. Equipment at the facility currently includes one 25 MMBtu/hr boiler and a variety of manufacturing processes with a particulate control system consisting of sixteen filter dust collectors and one cyclone.

The facility has the potential to emit more than 100 tons per year (tpy) of particulate matter (PM). In order to keep PM emissions below the Title V major source threshold, they are required to operate their control devices at all times while the associated emission units are operating. Therefore, the facility is considered a synthetic minor source. Emissions of all other criteria air pollutants and single/combined hazardous air pollutants (HAP) are each below their respective Title V major source thresholds.

The primary raw materials processed by the facility are polypropylene and polyethylene, received in the form of beads, pellets, and powders. Raw materials are first processed in one or more of five areas—the White Material Processing Room (WMPR), the Black Material Processing Room (BMPR), Grinding/Screening Operations (GMAC), the Nauta Blender (NBND), and the BioMedical Processing Room (BPR).

A portion of the raw materials processed in BMPR are sent to the Carbon Molding Room (CMGR) before being packaged and shipped, and materials from BPR are sent directly to packaging and shipping. BPR includes the Parts Sintering Areas C – F, and the Tool Room EDM Milling (TEDM). Materials processed in WMPR, BMPR, GMAC, and NBND are routed to one of two parts sintering areas (SNTA or SNTB) and the Belt Fabrication Area (BFAB). Products processed in BFAB are sent directly to packaging and shipping.

Porex Filtration Group currently operates under Air Quality Permit No. 3089-121-0256-S-03-0, issued on October 3, 2022.

Purpose of Application

On October 13, 2022, the facility submitted Application No. 28589 for the addition of a new 20.9 MMBtu/hr boiler. A Public Advisory was issued on October 19, 2022.

Updated Equipment List

Table 1: Emission Units

Emission Units			Associated Control Devices	
Source Code	**Description**	**Installation Date**	**Source Code**	**Description**
SNTA	Parts Sintering Area A	2002	DC01	Dust Collector
SNTB	Parts Sintering Area B	2002	DC02	Dust Collector
CMGR	Carbon Molding Room	2002	DC03	Dust Collector
BFAB	Belt Fabrication Room	2002	DC04	Dust Collector
BMPR	Black Material Processing	2002	DC05	Dust Collector
GMAC	Grinding and Screening	2002	DC06a, DC06b	Dust Collector
TEDM	Tool Room EDM Milling	2002	DC07	Dust Collector
WMPR	White Material Processing	2002	DC09, DC10 DC11, DC12	Dust Collectors
BPR	BioMedical Processing	2022	DC09, DC10, DC11, DC12	Dust Collectors
NBND	Nauta Blender	2002	CF09	Cyclone Separator/Filter

Table 2: Fuel-Burning Equipment

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
B1	25.0	Natural Gas/No.2 Oil fired	2001	2001
B2	**20.9**	**Natural Gas/No.2 Oil fired**	**2022**	**2022**

***Proposed emission units are in bold**

Emissions Summary

Boiler B2 will primarily combust natural gas, with the use of distillate fuel oil being limited to periods of testing or gas curtailment. The addition of Boiler B2 will result in an increase in emissions of all criteria air pollutants and single/combined HAP, but post-modification facility-wide totals of all pollutants will each remain below their associated Title V major source thresholds. Therefore, the facility will remain a synthetic minor source. No new rules or regulations apply to the modification, and all currently applicable rules and regulations will continue to apply to the facility.

Potential emissions were calculated based on 8,760 hours per year of operation and maximum capacity.

Table 3: Facility-Wide Emissions (tpy)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	3.7	4.4	0.68	3.7	4.4	0.68
NOx	18.8	27.8	8.97	18.0	27.8	8.97
SO_2	0.2	0.3	0.1	0.2	0.3	0.1
CO	9.0	16.6	7.6	8.7	15.9	7.2
VOC	0.6	1.1	0.5	0.6	1.0	0.4
Max. Individual HAP	0.2	0.4	0.16	0.2	0.4	0.16
Total HAP	0.2	0.4	0.17	0.2	0.4	0.17
Total GHG (if applicable)	--	--	--	--	--	--

Regulatory Applicability

40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Because Boiler B2 has a heat input capacity between 10 and 100 MMBtu/hr and has a construction date after June 9th, 1989, it is subject to Subpart Dc. This subpart limits fuel oil sulfur content to 0.5% for Boiler B2. The facility is required to maintain records of fuel suppliers' certifications demonstrating compliance with the fuel oil sulfur content limit. The facility must also maintain monthly fuel consumption records for Boiler B2.

40 CFR 63 Subpart DDDDD – NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters

Because the facility is not a major source of HAP emissions, Boiler B2 is not subject to Subpart DDDDD.

40 CFR 63 Subpart JJJJJJ – NESHAP for Industrial, Commercial, and Institutional Boilers for Area Sources

Because the facility is a minor source of HAP emissions, Boiler B2 is potentially subject to 40 CFR 63 Subpart 6J. In order to be considered a gas-fired boiler and avoid the requirements of Subpart 6J, fuel oil usage will be limited to gas curtailment, gas supply emergencies, or periods of testing on fuel oil for Boiler B2 (for a total of 48 hours of usage).

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

Georgia Rules (d)3. and (d)2.(ii) limits the opacity and rate of emission of fly ash and other particulate matter from fuel burning equipment with a capacity between 10 MMBtu/hr and 250 MMBtu/hr. Boiler B2 burns natural gas and distillate fuel oils that are both considered clean fuels. Therefore, Boiler B2 is expected to comply with both the PM emission limit and visible emission limit of Georgia Rule (d).

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

Georgia Rule (g) limits all fuel burning sources with a heat input capacity below 100 MMBtu/hr to burn only fuel containing no more than 2.5% sulfur, by weight. The requirements of 40 CFR 60 Subpart Dc limits fuel oil sulfur content to 0.5% for Boiler B2, subsuming the Georgia Rule (g) requirement.

Georgia Rule 391-3-1-.02(2)(lll), NOx Emissions from Fuel-Burning Equipment

Georgia Rule (lll) limits NOx emissions from fuel-burning equipment with a heat input capacity between 10 MMBtu/hr and 250 MMBtu/ to a maximum of 30 ppm at 3% oxygen on a dry basis. This rule applies to fuel-burning units that were installed after May 1st, 1999 in Fulton County. These requirements apply to the equipment during the period between May 1st and September 30th of each year. The facility is required by GA Rule (lll) to conduct annual tune ups on Boiler B2.

Permit Conditions

Existing Condition 2.2 was modified to subject Boiler B2 to the requirements of 40 CFR 60 Subpart Dc.

Existing Condition 2.3 was modified to restrict Boiler B2 to burning only natural gas and distillate fuel oil, and to limit distillate fuel oil usage in Boiler B2 to no more than 48 hours per year. This condition is for avoidance of 40 CFR 63 Subpart 6J.

Existing Condition 5.4 was modified to subject Boiler B2 to the annual NOx monitoring tune-ups required by GA Rule (lll).

Existing Condition 7.1 was modified to require the facility to keep records of all instances during which distillate fuel oil was fired in Boiler B2.

Existing Condition 7.2 was modified to require the facility to report certain occurrences during the combustion of distillate fuel oil in Boiler B2.

Existing Condition 7.3 was modified to give two options for maintaining records of each fuel combusted in Boiler B2.

Existing Condition 7.4 was modified to require the facility to verify each shipment of distillate fuel oil intended for combustion in Boiler B2 complies with the requirements of Condition 2.3.

Toxic Impact Assessment

The modification will result in an increase in single and combined HAP emissions; therefore, in order to comply with Georgia Air Toxics Guidelines, the facility was required to perform a Toxic Impact Assessment (TIA) for Boilers B1 and B2. Potential emissions of key HAP from Boilers B1 and B2 were compared with their respective minimum emission rates (MER). The boilers were assumed to combust only natural gas. Potential emissions of arsenic and nickel each exceeded their respective MER.

Table 4: PTE of Key HAP and Corresponding MER

Pollutant	Emission Rate (lb/hr)	Emission Rate (lb/yr)	MER (lb/yr)	Modeling Required?
Arsenic	9.2E-6	8.1E-2	5.7E-2	YES
Beryllium	5.5E-7	4.8E-3	9.7E-1	NO
Chromium VI	2.6E-6	2.3E-2	24.3	NO
Formaldehyde	2.1E-2	184.8	267	NO
Hexane	8.1E-2	710	170,000	NO
Nickel*	9.6E-5	8.45E-1	4.87E-1	YES

*nickel subsulfide

A toxic impact analysis of the two HAP was performed by calculating the maximum ground level concentration (MGLC) of each pollutant using SCREEN3 modeling. Emissions from all pollutants were assumed to emit from the two boilers and were therefore assumed to exhaust from boilers' two identical stacks; stack B2 was chosen to be representative of the most conservative emissions scenario. The stack height was assumed to be 9.1 meters, with a diameter of 0.6 meters. Exhaust velocity was assumed to be 11.0 meters/second, discharged vertically. A summary of the modeling results is shown in Table 5.

Table 5: Summary of Toxic Impact Analysis

Pollutant	AAC, µg/m3		SCREEN3 Modeling Results/MGCL, µg/m^3			Acceptability of the Predicted MGCL/Ambient Impact	
	15-Minute	Annual	1-Hour	15-Minute	Annual	15-Minute	Annual Impact
Arsenic	0.2	2.3E-4	7.6E-5	1.1E-4	6.1E-6	Acceptable	Acceptable
Nickel	--	2.0E-3	8.0E-4	--	6.4E-5	Acceptable	Acceptable

Based on a unit emission rate of 1 lb/hr, the unit MGLC was found to be 8.3 micrograms per cubic meter (µg/m^3), located 140 meters from the stack. The short-term (15-minute) and long-term (annual) MGLC for arsenic and nickel are each below their respective acceptable ambient concentrations (AAC), and therefore both pollutants comply with the Georgia Air Toxics Guidelines. No further modeling is needed.

MER and AAC values for each HAP were referenced from Appendix A of the Summary of Ambient Impact Assessment of Toxic Air Pollutant Emissions (2018).

Summary & Recommendations

Porex Filtration Group is a porous plastic parts manufacturer located in Fairburn, GA. The facility is requesting to construct and install a new 20.9 MMBtu/hr natural gas and distillate fuel oil fired boiler. The facility has the potential to emit over 100 tpy of PM and are required to operate their control devices at all times while the associated emission units are operating in order to keep PM emissions below major source levels. Therefore, they are a synthetic minor source.

I recommend that Permit No. 3089-121-0256-S-03-1 be issued to Porex Filtration Group. The SSCP will continue to be responsible for compliance and inspection of this facility. The Public Advisory for this application expired on November 18, 2022. No comments were received.