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NARRATIVE

TO: Heather Brown

FROM: Cassie Smith

DATE: April 19, 2023

Facility Name:	**Renewal by Andersen, LLC – Southeast Regional Manufacturing Facility**
AIRS No.:	151-00066
Location:	Locust Grove, GA (Henry County)
Application #:	28762
Date of Application:	February 28, 2023

Background Information

Renewal by Andersen, LLC (Andersen) is proposing to construct a window and door manufacturing and assembly facility in Locust Grove, Henry County (Southeast Regional Manufacturing Facility). Finished products from the facility are made primarily from Andersen's proprietary Fibrex® material, which is a blend of wood fiber and thermoplastic polymer.

Due to the nature of operations, the proposed Southeast Regional Manufacturing Facility will be classified as a synthetic minor source for VOC and HAP emissions. All other pollutants will have emissions below major source thresholds.

Purpose of Application

Andersen submitted a SIP application (Application No. 28762) for the purpose of constructing a window and door manufacturing and assembly facility in Locust Grove, to be known as the Southeast Regional Manufacturing Facility. Primary activities at this facility will include the following: Material Receiving; Class II Extrusion; Assembly Operations; and Support Operations.

Equipment List

The table below lists the emission units and respective control devices to be installed at the Southeastern Regional Manufacturing Facility. Support operations will include two (2) emergency generators and makeup air/building heat units that utilize natural gas.

Emission Unit ID No.	Description	APCD Unit ID	Description
EU1	Extrusion Operations	SCR1 SCR2	Wet Scrubber #1 Wet Scrubber #2
EU2	Assembly & Sawing Operations	DC1 DC2 DC3 DC5 DC6 DC7	Central Dust Collector #1 Central Dust Collector #2 Central Dust Collector #3 Standalone Dust Collector #1 Standalone Dust Collector #2 Standalone Dust Collector #3
EG1	Emergency Generator – Life Safety (762 hp)	None	None
EG2	Emergency Generator – Phase II (2206 hp)	None	None
MSC1	Miscellaneous natural gas combustion units for Makeup Air/Building heat (19.6 MMBtu/hr total NG)	None	None

Emissions Summary and Regulatory Applicability

The facility is a minor source relative to New Source Review and will not require a Title V operating permit. To achieve and maintain this status, the facility is electing to accept emission constraints on this equipment. The facility-wide maximum potential emissions are summarized in the table below and take into account restrictions on production and operating parameters, as well as the use of control devices, that will be used to maintain a synthetic minor source status. Detailed emission calculations are included in Appendix B of Application No. 28762.

Pollutant	Potential Emissions (tpy)
PM	5.29
$PM_{2.5}$	5.29
PM_{10}	5.29
VOC*	22.11
NO_X	11.45
CO	8.78
SO_2	0.05
Total CO_2e	10,338
Max HAP (ethylene glycol)	2.08
Total HAP	4.29

*Facility has requested 25 tpy limit for VOC

40 CFR 52.21

The Southeast Regional Manufacturing Facility will be located in Henry County, which has been classified as in attainment for all criteria pollutants except ozone. The major source threshold for PSD applicability is 250 tpy unless the source is classified as one of the 28 named sources whose major source threshold is 100 tpy. The facility is a window and door manufacturing and assembly facility, which is not one of the 28 listed source categories. Since facility potential emissions are less than 100 tpy, the facility is considered a minor source with respect to both NSR and PSD.

40 CFR 60 Subpart A – General Provisions
This subpart specifies the initial notification, performance testing, recordkeeping and monitoring, test reference methods, and general control device requirements for affected facilities.

40 CFR 60 Subpart IIII – Compression Ignition Internal Combustion Engines
This subpart sets emission standards for NO_X, CO, PM and hydrocarbons (HC) for certain types of CI ICE. Pursuant to 40 CFR 60.4200(a), Subpart IIII applies to stationary CI ICE manufactured in 2006 or later.

The facility plans to install two (2) diesel fuel-fired emergency generators (CI ICE). The Life Safety emergency generator is rated at 762 hp, whereas the Phase II generator is rated at 2,206 hp. Compliance with this subpart will be determined through the use of a certified engine with a non-resettable hour meter, performing maintenance on the engine according to the manufacturer's written instructions, and keeping records of maintenance and engine certifications on-site. Additionally, pursuant to 60.4211(f)(3), emergency engines cannot operate for more than 50 hours for non-emergency use and 100 total hours for non-emergency use, maintenance, and testing.

40 CFR 63 Subpart A – General Provisions
This subpart contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources subject to another NESHAP are subject to the general provisions of Subpart A.

40 CFR 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines
This subpart applies to the two (2) emergency generators; however, pursuant to 40 CFR 63.6590(c) the requirements under Subpart ZZZZ are met if the requirements of NSPS Subpart IIII or JJJJ are met. As the emergency generator engines are subject to the requirements of NSPS Subpart IIII, no further requirements apply for the engines under this part.

GA Rule 391-3-1-.02(2)(b) – Visible Emissions
This rule limits the opacity from all sources to 40%, provided that the source is not subject to some other emission limitation under GRAQC 391-3-1-.02(2). This regulation is applicable to operations at the facility. The natural gas combustion units (MSC1) at the facility, however, are subject to another opacity limit under GA Rule (d).

GA Rule 391-3-1-.02(2)(d) – Fuel Burning Equipment
This rule limits PM emissions from fuel burning equipment based on heat input capacity. In addition, opacity is limited to 20% except for one six-minute period per hour, which may be up to 27%. The facility plans to install 29 rooftop units (MSC1) which are rated at < 1 MMBtu/hr each and will only fire natural gas. These units will be subject to the PM limitations set forth in this rule, as they meet the definition of fuel-burning equipment. Compliance with the PM emission limits are considered inherent to the heating units, which fire exclusively natural gas.

GA Rule 391-3-1-.02(2)(e) – Particulate Matter from Manufacturing Processes
This rule limits PM from manufacturing processes calculated using equations based on process input weight rates. The extrusion and assembling process equipment (EU1 & EU2) are subject to this rule. The facility will demonstrate compliance through the use of a dust collection system to minimize PM emissions.

GA Rule 391-3-1-.02(2)(g) – Sulfur Dioxide
This rule establishes SO_2 emission limits for fuel-burning sources. The proposed natural gas combustion units (MSC1) all have a capacity less than 100 MMBtu/hr and are subject to a fuel sulfur content limit of 2.5% by weight. Compliance is inherent with this rule through the use of natural gas for combustion.

GA Rule 391-3-1-.02(2)(n) – Fugitive Dust

This rule requires facilities to take reasonable precautions to prevent fugitive dust from becoming airborne. Operations at the facility involving extrusion and assembly operations 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.

GA Rule 391-3-1-.02(2)(mmm) – NO_X Emissions from Stationary Gas Engines used to Generate Electricity

This rule limits emissions of NO_X from any stationary engine used to generate electricity in Henry County from the period of May 1 through September 31 each year. The two emergency generators meet the definition of stationary engines used to generate electricity; however, they are exempt from the emissions limitations as set forth per 391-3-1-.02(2)(mmm)(7) as they will operate less than 200 hours per year. Therefore, this rule does not apply.

GA Rule 391-3-1-.02(2)(tt) – VOC Emissions from Major Sources, and Rule (yy) – Emissions of NO_X from Major Sources

These rules apply to any facilities located in Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Forsyth, Fulton, Gwinnett, Henry, Paulding, or Rockdale counties that have potential emissions greater than 25 tpy for VOC or NO_X, respectively. A facility subject to either of these rules must perform a Reasonably Achievable Control Technology (RACT) assessment to demonstrate compliance with state and federal best operating practices. While the Southeast Regional Manufacturing Facility is located in Henry County, the potential emissions calculations demonstrate that the facility will remain below RACT requirements for both VOC and NO_X. As such, the following regulations will also not apply at the facility since the prerequisite requirements of all of the listed regulations is that the facility exceeds the 25 tpy limits in either NO_X or VOC:

391-3-1-.02(2)(tt) – VOC Emissions from Major Sources.
391-3-1-.02(2)(yy) – NO_X Emissions from Major Sources.
391-3-1-.02(2)(hhh) – Wood Furniture Finishing and Cleaning Operations
391-3-1-.02(2)(rrr) – NO_X Emissions from Small Fuel-Burning Equipment

In addition, the following regulations were once applicable to manufacturing facilities located in Henry County due to a previous nonattainment designation for the Atlanta Area (including Henry County.) However, as of the date of this application, the following regulations no longer apply:

391-3-1-.02(2)(yyy) – VOC Emissions from the Use of Miscellaneous Industrial Adhesives
391-3-1-.02(2)(aaaa) – Industrial Cleaning Solvents

It should be noted that the facility has requested an enforceable SM VOC limit of 25 tpy to avoid being subject to this RACT. With this limit they are inherently limiting HAP emissions below the 10/25 tpy thresholds as well.

Permit Conditions

Conditions 1.1 through 1.5 are general conditions that apply to all synthetic minor sources.

Condition 2.1 limits facility-wide emissions of VOC to less than 25 tpy.

Condition 2.2 limits opacity of emissions from manufacturing processes to less than 40 percent.

Condition 2.3 limits PM emissions to less than the rates as calculated using the given equations.

Condition 2.4 restricts the fuel used in the combustion equipment (MSC1) to natural gas only.

Condition 2.5 contains requirements for the emergency generators (EG1 and EG2) pursuant to 40 CFR 60 Subparts A and IIII, and 40 CFR 63 Subparts A and ZZZZ.

Condition 3.1 is a general condition to prevent fugitive dust.

Condition 4.1 requires the facility to perform and keep records of routine maintenance on all air pollution control equipment.

Condition 4.2 requires the facility to operate control equipment during all times associated emission units are in operation.

Condition 4.3 requires the facility to maintain an adequate supply of filter bags for the dust collectors.

Condition 5.1 lists the monitoring parameters and frequency of data collection for the scrubbers and dust collectors.

Condition 5.2 requires the facility to perform daily visible emissions checks for dust collectors.

Condition 5.3 requires the facility to develop a preventative maintenance program for the dust collectors.

Condition 6.1 indicates that the Director may require performance testing to be conducted at any specified emission point. It also indicates procedures to be followed therein.

Condition 7.1 requires the facility to send in notification of startup.

Condition 7.2 requires the facility to submit normal operating parameters for each scrubber within 60 days of startup.

Condition 7.3 outlines the information required to be submitted in the semi-annual reports.

Condition 7.4 requires the facility to submit a protocol to be used to calculate monthly and 12 month rolling totals of VOC emissions.

Conditions 7.5 and 7.6 require the facility to calculate monthly and 12 month rolling total VOC emissions.

Condition 8.1 is a general condition that applies to all Georgia air permits.

Condition 8.2 requires the facility to calculate and pay air permit fees.

Toxic Impact Assessment

Andersen evaluated emissions of various TAPs associated with the proposed combustion units and process operations. A MER analysis was completed in accordance with the 2017 Edition of the Georgia Air Toxics Guideline. Chemical inventories obtained from other Andersen facilities were used to derive expected throughputs of TAPs in the assembly operations. Worst-case emission rates for each assembly material were determined by multiplying emissions by the adjusted throughput safety factor of 1.25 and assuming that all TAPs will be emitted.

TAPs from Class II Extrusion operations were obtained from 2022 stack test results at another Andersen facility multiplied by a 10% variability factor. Pollutants with values below the Method Detection Level (MDL) are presumed to indicate the pollutant is not present from stack outlets. As the 2022 stack test did not cover hydrogen chloride emissions, an alternative emission factor derived from another Andersen facility was utilized instead. This emission factor was based on historical emissions testing from extrusion operations without an associated scrubber, which ensures that the hydrogen chloride emission factor used in this scenario will be conservative.

The table below summarizes Andersen's potential emission rates for individual TAPs and compares them to the respective MERs. As the potential emissions for every TAP remained below their respective MER, the facility is not subject to further modeling.

Substance Name	Assembly Products (lb/yr)[1]	Extrusion (lb/yr)[2]	NG Combustion (lb/yr)[3]	Diesel Combustion (lb/yr)[4]	TOTAL (lb/yr)	MER (lb/yr)	% of MER
acetaldehyde	--	2.00E+02	--	1.46E-01	**2.00E+02**	1.11E+03	18.1%
acetone	1.97E+02	--	--	--	**1.97E+02**	2.78E+05	0.1%
acrolein	--	--	--	4.57E-02	**4.57E-02**	4.87E+00	0.9%
acrylonitrile (vinyl cyanide)	4.75E-02	--	--	--	**4.75E-02**	3.58E+01	0.1%
arsenic, inorganic compounds (as As)	--	--	4.63E-04	--	**4.63E-04**	5.67E-02	0.8%
barium	--	--	7.41E-01	--	**7.41E-01**	5.79E+01	1.3%
benzene	--	--	3.54E-01	4.50E+00	**4.85E+00**	3.16E+01	15.3%
beryllium, elemental	--	--	2.02E-03	--	**2.02E-03**	9.73E-01	0.2%
butyl acetate (n-)	1.07E+02	--	--	--	**1.07E+02**	8.23E+04	0.1%
cadmium, elemental and compounds	--	--	1.85E-01	--	**1.85E-01**	1.35E+00	13.7%
carbon black	5.90E+00	--	--	--	**5.90E+00**	4.04E+02	1.5%
chlorobenzene	2.65E+00	--	--	--	**2.65E+00**	4.05E+04	0.0%
chromium (VI) Particulate[5]	--	--	2.36E-01	--	**2.36E-01**	2.43E+01	1.0%
cobalt, elemental & compounds as Co	--	--	1.41E-02	--	**1.41E-02**	1.17E+01	0.1%
copper (dusts and mists; as Cu)	--	--	1.43E-01	--	**1.43E-01**	1.17E+02	0.1%
cumene	2.65E+00	--	--	--	**2.65E+00**	9.73E+04	0.0%
cyclohexane	6.63E+02	--	--	--	**6.63E+02**	1.46E+06	0.0%
cyclohexanone	5.34E+01	--	--	--	**5.34E+01**	2.32E+04	0.2%
dichlorobenzene (1,2-)	--	--	2.03E-01	--	**2.03E-01**	1.74E+04	0.0%
diphenylmethane-4,4'-diisocyanate (MDI)	1.65E-03	--	--	--	**1.65E-03**	1.46E+02	0.0%
ethanol	1.33E+02	--	--	--	**1.33E+02**	2.19E+05	0.1%
ethyl acetate	7.03E+01	--	--	--	**7.03E+01**	1.62E+05	0.0%
ethyl benzene	3.36E+02	--	--	--	**3.36E+02**	2.43E+05	0.1%
ethylene glycol	3.33E+03	--	--	--	**3.33E+03**	2.01E+04	16.5%
formaldehyde	--	2.00E+02	1.26E+01	4.58E-01	**2.13E+02**	2.67E+02	79.9%
hexane (n-)	--	--	3.02E+02	--	**3.02E+02**	1.70E+05	0.2%
hydrogen chloride	--	7.79E+02	--	--	**7.79E+02**	4.87E+03	16.0%
iron oxide fume	2.23E+00	--	--	--	**2.23E+00**	1.16E+03	0.2%
isopropyl alcohol (isopropanol)	3.22E+02	--	--	--	**3.22E+02**	1.14E+05	0.3%
lead, elemental, inorganic compounds(as Pb)	--	--	8.41E-02	--	**8.41E-02**	5.84E+00	1.4%
maleic anhydride	2.65E-01	--	--	--	**2.65E-01**	1.16E+02	0.2%
manganese, elemental & compounds (as Mn)	--	--	6.40E-02	--	**6.40E-02**	1.22E+01	0.5%
MDI	1.65E-03	--	--	--	**1.65E-03**	1.46E+02	0.0%
mercury, elemental & inorganic compounds (as Hg)	--	--	4.38E-02	--	**4.38E-02**	7.30E+01	0.1%
methyl acetate	5.45E+03	--	--	--	**5.45E+03**	2.32E+04	23.5%
methyl alcohol (methanol)	3.82E+02	1.00E+03	--	--	**1.38E+03**	3.01E+04	4.6%
methyl ethyl ketone (2-butanone)	6.26E+00	2.00E+02	--	--	**2.06E+02**	1.22E+06	0.0%
methyl n-amyl ketone	2.32E+00	--	--	--	**2.32E+00**	5.39E+04	0.0%
methyl propyl ketone (2-pentanone)	1.48E+01	--	--	--	**1.48E+01**	6.14E+04	0.0%
molybdenum, insoluble cmpds & dusts (as Mo)	--	--	1.85E-01	--	**1.85E-01**	1.74E+03	0.0%
naphthalene	--	--	1.03E-01	7.54E-01	**8.57E-01**	7.30E+02	0.1%
nickel, elemental & compounds (as Ni)	--	--	3.53E-01	--	**3.53E-01**	3.86E+01	0.9%
propane	7.95E+01	--	--	--	**7.95E+01**	2.09E+05	0.0%
selenium, elemental & compounds (as Se)	--	--	4.04E-03	--	**4.04E-03**	2.34E+01	0.0%
styrene (phenylethylene; vinyl benzene)	2.38E-01	--	--	--	**2.38E-01**	2.43E+05	0.0%
tetrahydrofuran	7.82E+03	--	--	--	**7.82E+03**	6.84E+04	11.4%
titanium dioxide (total dust)	5.12E+01	--	--	--	**5.12E+01**	1.74E+03	2.9%
toluene	6.68E+01	5.51E+01	5.72E-01	1.63E+00	**1.24E+02**	1.22E+06	0.0%
xylene (o-, m-, p-isomers)	7.01E+02	9.65E+01	--	1.12E+00	**7.98E+02**	2.43E+04	3.3%

[1] Assembly Products Emissions (lb/yr) obtained from Table 6, *Assembly TAPs Totals*.
[2] Extrusion Emissions (lb/yr) obtained from Table 9. *Extrusion and Combustion TAPs Emissions Rate*.
[3] NG Combustion Emissions (lb/yr) obtained from Table 9. *Extrusion and Combustion TAPs Emissions Rate*.
[4] Diesel Combustion Emissions (lb/yr) obtained from Table 9. *Extrusion and Combustion TAPs Emissions Rate*.
[5] Per U.S. EPA *Locating and Estimating Air Emissions from Sources of Chromium*, Chromium emissions derived from the combustion of natural gas are assumed to condense into fine particulates. Thus, chromium emissions are compared against the Chromium (VI) Particulate emission rate.

Summary & Recommendations

Based on the information above, I recommend Renewal by Andersen, LLC – Southeast Regional Manufacturing Facility be issued Permit No. 3089-151-0066-S-01-0 for the operation of a window and door manufacturing and assembly facility, to be located at 555 Price Drive in Locust Grove (Henry County). The facility will be considered a synthetic minor source (VOC). A public advisory was issued for this application and expired April 17, 2023. No comments were received.