ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

November 3, 2016

SUBJECT: **Liberty Pultrusions**
1575 Lebanon School Road
West Mifflin, PA 15122
Allegheny County

Operating Permit: No. 0015

TO: JoAnn Truchan
Acting Chief Engineer

FROM: Gregson Vaux
Air Quality Engineer

FACILITY DESCRIPTION:

Liberty Pultrusions is located at, 1575 Lebanon School Road, West Mifflin Borough, Allegheny County. The facility is a minor source of all criteria pollutants and a major source of hazardous air pollutants (HAPs) and volatile organic compounds (VOCs) as defined in section 2101.20 of Article XXI. The facility operates ten pultrusion lines in which fiberglass strands and mats are impregnated with polyester resin by being slowly pulled through a resin bath and subsequently cured in heated dies to desired shapes, producing fiberglass reinforced plastic. Styrene is the resin carrier and is emitted from the resin baths to the atmosphere. Individual line saws, connected to a dust collector, cut the cured fiberglass reinforced plastic shapes to desired lengths.

EMISSION SOURCES:

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
Line 01	Pultrusion Line Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr	Fiberglass and Polyester Resin	N/A
Line 02	Pultrusion Line Wet Bath	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 03	Pultrusion Line Wet bath (primarily)	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 04	Pultrusion Line Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 05	Pultrusion Line Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 06	Pultrusion Line Wet bath (50%) pump line (50%)	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 07	Pultrusion Line, Manual Wet Out Box Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 08	Pultrusion Line, Manual Wet Out Box Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 09	Pultrusion Line, Manual Wet Out Box Pump Line	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
Line 10	Pultrusion Line, Flow Through Pan (wet bath)	Wet Area Enclosure, resin drip collection system	150 lbs/hr of product	Fiberglass and Polyester Resin	N/A
SAW01 – SAW17	Ten (10) Cut-off Saws Seven (7) chop saws	Baghouse	4400 tons/yr total	Fiberglass and Polyester Resin	S001
EG-01	Emergency Generator Caterpillar 3406	None	260 KW	Diesel Fuel	S002
B-001	Boiler No. 001	None	8.4 MMBtu	Natural Gas	S003

CALCULATIONS FOR PULTRUSION LINES 01-10

40 CFR 63 WWWW divides composite production operations into three groups: those that must use add-on control devices to reduce HAP emissions by 95%; those that are required to comply with certain work practice standards; and those that must comply with certain emission limits by employing pollution prevention controls. Due to the pultrusion technology that Liberty employs and the overall throughput of resin, Liberty is permitted by subpart WWWW to select the option of wet area enclosures and resin drip collection systems to reduce organic HAP emissions.

Of the ten pultrusion lines, numbers 2, 3, and 10 predominantly operate in a wet bath configuration and thus an emission factor of 0.76 lbs/hr styrene is used. Lines 1, 4, 5, 7, 8,and 9 predominantly operate in a pump line configuration, so an emission factor of 1.46 lb/hr styrene is used. Line 6 operates in both a wet bath and pump line configuration, so the higher emission factor of 1.46 lb/hr styrene is used.

The emission factors of 0.76 and 1.46 lb/hr styrene were calculated, based on a May 20, 2009 stack test at Liberty Pultrusions. The details of the calculations can be found in the "Line EFs" tab of the attached spreadsheet. A 10% uncertainty was also added to the EFs, which is department policy when determining EFs from a stack test.

Emission Limitations Pultrusion Lines 01 through 10

LINE NO.	STYRENE/VOC LBS/HR [1]	STYRENE/VOC TPY [2]
No. 01	1.3	5.3
No. 02	0.67	2.8
No. 03	0.67	2.8
No. 04	1.3	5.3
No. 05	1.3	5.3
No. 06	1.3	5.3
No. 07	1.3	5.3
No. 08	1.3	5.3
No. 09	1.3	5.3
No. 10	0.67	2.8

[1] Averaged over the actual operating hours in each operating day.
[2] A year is defined as any 12 consecutive months.

CALCULATIONS FOR SAWS 01-17

The quantity of particulate matter emitted by the cut off saws was determined by estimating the

percentage of the finished product that is removed by the saw blades and multiplying this by total throughput. The previous operating permit estimated the capture efficiency of the baghouse at 70% and the control efficiency of the baghouse as 96%. Thus, 30% of the dust generated by the saw blades is estimated to be released into the ambient air. Further details can be found in the "Cutoff Saws" tab of the attached spreadsheet.

Emission Limitations for Saws 01-17

Pollutant	lb/hr	tons/yr[1]
PM/PM-10	0.53	0.12

[1] A year is described as any consecutive 12-month period.

CALCULATIONS FOR EMERGENCY GENERATOR EG-01

The emission factor for particulate matter was based on §2104.02.a.1 of Article XXI. The limit is 0.28 pounds per MMbtu of heat input, which was then converted to 0.002 lb/hp-hr using a conversion factor of 140.9 hp-hr/MMBtu. Emission factors for NOx, CO, VOCs, and HAPs come from AP-42 chapter 3.3. An annual usage of 500 hours per year and a generator horsepower rating of 349 hp were used to complete the calculations. SO2 emissions were calculated by assuming that all of the sulfur in the fuel is converted into SO2 during the combustion process. Details of all of the calculations can be found in the attached spreadsheet.

Emission Limitations Emergency Generator EG-001

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	ANNUAL EMISSION LIMIT (tons/year)*
PM	0.70	0.17
PM_{10}	0.70	0.17
$PM_{2.5}$	0.70	0.17
SO_2	0.005	0.001
NO_X	12.4	3.1
CO	2.7	0.67
VOCs	1.00	0.25
HAPs	0.01	0.003

[1] A year is defined as any consecutive 12-month period.

CALCULATION FOR BOILER B-001

The emission factor for particulate matter was based on §2104.02.a.1 of Article XXI. The limit is 0.008 pounds per MMbtu of heat input. Using that number as a basis, the pounds per hour and tons per year were calculated. The SO_2, NO_X, CO, and VOC calculations used AP-42 factors (table 1.4-2). Per AP-42, PM, PM_{10} and $PM_{2.5}$ emissions are equal when natural gas used as the fuel. The PM, PM_{10} and $PM_{2.5}$ include both filterable and condensable fractions. Details of all of the calculations can be found in the attached spreadsheet.

Emissions Limits for Boiler 001

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	ANNUAL EMISSION LIMIT (tons/year)*
PM	0.067	0.29
PM_{10}	0.067	0.29
$PM_{2.5}$	0.067	0.29
SO_2	0.006	0.025
NO_X	0.95	4.15
CO	0.80	3.5
VOCs	0.052	0.23

* A year is defined as any consecutive 12-month period.

PRE-IMPREGNATED EPOXY COATED FIBERGLAS LAMINATION PROCESS:

The lamination process uses high solids resin to laminate fiberglass. The fiberglass is put into a press and sealed except for the short side edges of the piece to be laminated. The piece is then pressed and heated in a sealed condition where almost all of the volatile contents become part of the finished product. The piece is then left to cool and removed. The only VOC emissions possible from this process are from the edges of the lamination piece during processing. Since these two edges are at most 2 to 3 feet long and less than 1/8" in thickness and the fact that the piece is pre-impregnated offsite with no resin addition on site, emissions from this process are negligible.

OPERATING PERMIT APPLICATION COMPONENTS

E-mail from Liberty Pultrusion and attached spreadsheet (Oct 8, 2013)
E-mail from Liberty Pultrusions and attached PDF (Oct 1, 2013)
E-mail from Liberty Pultrusions and attached spreadsheet (Sept 27, 2013)
E-mail from Liberty Pultrusions and attached spreadsheet (Sept 26, 2013)

Title V Permit Application (received Nov 9, 2009)
Installation Permit 0015-I001 (Issued Sept 7, 2005)
Installation Permit 0015-I002 (Issued Sept 22, 2008)
Resolite Polyglas Operating Permit 0015 (Issued April 8, 2002)

APPLICABLE REQUIREMENTS

New Source Review/ Prevention of Significant Deterioration (§2102.06; §2102.07)
There have been no permitted changes in emissions, or determinations, in the last five years.

New Source Performance Standards
There are no applicable NSPSs for this installation.

National Emission Standards for Hazardous Air Pollutants (NESHAPs):
This process is subject to Subpart WWWW, National Emission Standards for Hazardous Air Pollutants: Reinforced Composite Plastics Production. Compliance with this standard was required by April 21, 2006 for all of the existing pultrusion lines.

Method of Demonstrating Compliance
Compliance with the emission standards set in this permit may be demonstrated by periodic testing of the lines, complying with operating restrictions on the permanent enclosures, record keeping requirements, and reporting requirements.

RECOMMENDATION

The facility is in compliance with all applicable regulations of Article XXI and it is recommended that the Operating Permit No. 0015 be issued.