The State of New Hampshire
Department of Environmental Services

Thomas S. Burack, Commissioner

May 31, 2016

Gwenael Busnel
Plant Manager
Saint-Gobain Performance Plastics Corporation
701 Daniel Webster Highway
Merrimack, NH 03054-1137

RE: On-Site Partial Multimedia Compliance Evaluation

Dear Mr. Busnel:

The New Hampshire Department of Environmental Services, (NHDES) has completed a Partial Multimedia Compliance Evaluation of the Saint-Gobain Performance Plastics Corporation, Merrimack, New Hampshire facility (Saint-Gobain). The compliance evaluation included an on-site inspection completed March 31, 2016, by a multimedia team covering the areas of air, hazardous waste, groundwater and wastewater. This is a copy of the Partial Multimedia Compliance Evaluation Report for your review and records.

The NHDES found deficiencies during this compliance evaluation as detailed in this report.

If you have any questions, please do not hesitate to give me a call at (603) 271-1987 or by email at Edward.PedutoJr@des.nh.gov.

Sincerely,

Edward F. Peduto, Jr.
Senior Compliance Assessment Engineer
Air Resources Division

cc: Town Administrator, Town of Merrimack, 6 Baboosic Lake Road, Merrimack, NH 03054

Abbreviations and Acronyms

AAL	Ambient Air Limit
acf	actual cubic foot
ags	above ground surface
ASTM	American Society of Testing and Materials
Btu	British thermal units
CAS	Chemical Abstracts Service
CI	Compression Ignition
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CPMS	Continuous Parameter Monitoring System
DER	Discrete Emission Reduction
NHDES	New Hampshire Department of Environmental Services
Env-A	New Hampshire Code of Administrative Rules – Air Resources Division
FEP	Fluorinated ethylene propylene
ft	foot or feet
ft^3	cubic feet
gal	gallon
HAP	Hazardous Air Pollutant
hp	horsepower
hr	hour
kW	kilowatt
lb	pound
LPG	Liquefied Petroleum Gas
MSDS	Material Safety Data Sheet
Mg	One metric ton or 2,205 lbs
MM	million
MW	megawatt
NAAQS	National Ambient Air Quality Standard
NG	Natural Gas
NMVOC	Non-methane Volatile Organic Compound
NOx	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NCCWGP	Non-contact Cooling Water General Permit
NSCR	Non-Selective Catalytic Reduction
NSPS	New Source Performance Standard
PFA	Per-fluoroalkoxy-alkane
ppm	parts per million
POTW	Publicly Owned Treatment Works
PTFE	Polytetrafluoroethylene
RACT	Reasonably Available Control Technology
RICE	Reciprocating Internal Combustion Engine
RTAP	Regulated Toxic Air Pollutant
scf	standard cubic foot
SDS	Safety Data Sheet
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulate
tpy	tons per consecutive 12-month period
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

BACKGROUND

The New Hampshire Department of Environmental Services (NHDES) is currently investigating the presence of perfluorochemicals (PFCs) in drinking water in the towns of Merrimack, Litchfield, Manchester, Londonderry and Bedford, New Hampshire. The investigation was initiated in early March 2016, when Saint-Gobain Performance Plastics Corporation (Saint-Gobain) notified NHDES that perfluorooctanoic acid (PFOA) was detected at low levels in samples taken from four water faucets within its Merrimack facility served by the Merrimack Village District Water System. The NHDES initiated an investigation into the possible PFOA sources and associated release mechanisms in southern, New Hampshire including facilities known to have used these types of chemicals.

The NHDES conducted an unannounced Partial Multimedia Compliance Evaluation of Saint-Gobain that included a site inspection on March 31, 2016, at the Merrimack, New Hampshire facility as part of the overall investigation into the environmental fate and transport of PFOA in the environment. The purpose of the inspection was discussed as well as the rules pertaining to claims of confidentiality and facility safety concerns. Saint-Gobain agreed to the inspection and authorized access to the facility. Information designated as confidential has been used to evaluate compliance but is not referenced directly in this report. Below is site identification information for the facility.

Facility Name and Address	Saint-Gobain Performance Plastics Corporation 701 Daniel Webster Highway Merrimack, NH 03054-1137
County	Hillsborough
Telephone	603-420-1486
Air AFS#	3301100165
EPA ID#	NHD982746778
Storm Water Permit ID#	NHR05B010
NPDES NCCWGP	General Permit
Source Type	Air Synthetic Minor Hazardous Waste Full Quantity Generator
Inspection Date / Time	March 31, 2016 – 9:00 a.m.
Inspection Type	Partial Multimedia Compliance Evaluation
Weather	Cloudy, 65 degrees and moderate winds.
Inspected by	Tammy Calligandes, Hazardous Waste Specialist Mitch Locker, Groundwater Protection Specialist Edward Peduto, Senior Compliance Assessment Engineer Alexis Rastorguyeff, Industrial Pretreatment Supervisor
Source Contact(s)	Gwenael Busnel, Plant Manager Chris Gilman, Facilities Manager Kimberly Weeks, EHS Engineer Steve Donaho, Senior Process Chemist

SITE HISTORY

In 1971, General Electric Company, Turbine Business Unit (GE) built the facility currently occupied by Saint-Gobain. GE manufactured turbine based electrical generating components at this location until the company made the decision to close the facility in 1982. Manufacturing operations included heat treating units, machining operations, fuel burning devices for building and process heat and fluid degreasing equipment used by the maintenance department. The facility held an air permit during the period 1974 through 1982 which covered air emissions from the fuel burning devices used for building and process heat. Manufacturing practices at this site did not result in appreciable air emissions or the use of large quantities of hazardous materials and there are no records of spills or hazardous material releases to the environment.

The primary fuel used at the time was number 2 fuel oil and diesel fuel. These fuels were stored in two 300-gallon above ground tanks and 10,000 and 1,000 gallon underground storage tanks. Fuel storage tanks were removed by the successor owner in August 1992 and closure conducted as per NHDES requirements. No spills or releases from these tanks are known to have occurred.

GE sold the facility to Chemical Fabrics Corporation (ChemFab) in February of 1984 at which time, the facility was retrofitted to accommodate the business practices and processes used to engineer and manufacture high performance plastics products. ChemFab was founded in 1968 and began operations in Bennington, Vermont manufacturing Teflon®-coated glass fabrics. In 1984, ChemFab moved its weaving and Research & Development operations from Manchester to Merrimack and also acquired Florida-based Toralon Products Corporation which was relocated to Merrimack. Toralon produced PTFE films and owned technologies for multilayer cast-film processing. These relocated operations were the initial processes established in Merrimack in 1984.

ChemFab (and after 2000 Saint-Gobain) continued its Bennington operations until 2002 when the facility was closed. During the period 1984 through 2002, various processes were relocated from Bennington to Merrimack until the consolidation was completed in 2002.

Saint-Gobain purchased the businesses, assets and liabilities (which included the Merrimack Facility) of Chemfab in 2000, and renamed the company ChemFab Saint-Gobain. The facility operations through the present have been essentially the same as those conducted when ChemFab owned the facility. The types of products and the number of process towers have not dramatically changed over the past fifteen years.

PROCESS DESCRIPTION

Saint-Gobain manufactures polytetrafluoroethylene (PTFE) coated fiberglass and PTFE films and uses a portion of the manufactured materials to fabricate products for end users. The fabrics are manufactured for a variety of chemical and weather resistant applications and the films for cooking surfaces and laminating coated fabric. The basic processes involved in manufacturing the product mix include weaving, coating formulation, formulation application, curing and fusing in a heat treating tower, conversion to the required size specifications and fabrication into specific assemblies.

Raw dispersions containing PTFE, FEP and / or PFA and surfactants and water are mixed with pigments, wetting agents, viscosifiers, and fillers to prepare a working coating formulation. The prepared formulation is then placed in a dip pan and the fabric being coated passes through the pan as the first step in the coating process. Following the coating pass, the material enters a heat treating tower with three progressively hotter zones; the first zone drives off the water and the

surfactants are driven off in the second, with fusing of the coating to the substrate material occurring in the third heat zone of the tower. The process may require multiple coating passes through the dip pan depending on product specifications.

Film manufacturing is conducted much the same way as fabric coating. For this product, the coating is cast onto a moving stainless steel or polyimide belt through a dip pan and cured in a tower as described above. The thickness of the film is controlled by the number of passes through the dip process. Once the casting and curing process is completed, the film is stripped from the moving belt and placed on a roll.

Manufactured components are sold as bulk materials for use by outside vendors and some is used to assemble radar domes, HazMat suits, architectural membranes and industrial fabrics.

Table 1, below taken from State Permit to Operate, SP-0072 lists the current permitted emission units for the facility. Emission Units EU09 and EU10 (not listed below) were in operation from 2002 through 2014 and have been removed from the facility. Other emission units not requiring permits have included oil fired boilers and the currently used gas fired units for providing building heat.

Table 1 - Emission Unit Identification

Emission Unit ID	Process Identification	Installation Date	Maximum Design Capacity		
			Curing zone burner	Operating speed	
			(MMBtu/hr)	(ft/min)	ft^2/hr
EU01	Tower MA	1994	3.8	18	5,400
EU02	Tower MB	1998	8.0	5	4,300
EU03	Tower MC	1998	4.5	15	6,000
EU04	Tower MR	2002	4.5	15	6,000
EU05	Tower MD	1999	9.0	15	6,000
EU06	Tower QX	1989	7.5	22	6,600
EU07	20” SBC	1986	NA	4.5	450
EU08	20” Coater	1986	NA	4.5	450
EU11	Tower ME	2002	8.0	5	4,000
EU12	Tower MG	2002	6.0	5	4,200
EU13	Tower MP	2002	9.0	5	4,000
EU14	Tower MI	2003	3.0	15	3,000
EU15	Tower MQ	2002	3.0	18	3,960
EU16	Tower MS	2002	4.5	10	4,000
EU17	Antenna Coating	1993	NA	NA	NA

Emission Unit ID	Emission Unit Description	Installation Date	Maximum Design Capacity & Permitted Fuel Types
EU20	Clarke fire pump model: JU4H-UF AD5G John Deere engine: Model: 4045	2015	1.20 MMBtu/hr (110 hp) No 2 fuel oil/diesel – equivalent to 8.7 gal/hr
EU21	Kohler generator set model: 40REOZJC John Deere engine: Model: 024HF285B	2015	0.47 MMBtu/hr (80 hp) No 2 fuel oil/diesel – equivalent to 3.4 gal/hr

DISPERSION FORMULATION

Saint-Gobain and the predecessor company ChemFab primarily used aqueous dispersions to manufacture their suite of products. Aqueous dispersions of PTFE, FEP or PFA require additives to ensure against sheering (agglomeration) of the dispersed molecules. Historically, dispersion manufacturers used ammonium perfluorooctanoate (APFO, an ammonium salt of PFOA) to inhibit agglomeration. Prior to 2005, raw dispersions contained up to 1,000 ppm of APFO. Thereafter, the APFO content was scaled down to less than 50 ppm by 2010. U.S. dispersion manufacturers have stated that APFO was not added to dispersions after 2015.

Saint-Gobain's reported air emissions followed the trend stated above. APFO emissions in 2004 were in excess of 4,000 lbs/year and by 2007 were reduced to less than 60 lbs/year. The levels steadily declined to less than 10 lbs/year by 2011 and the last dispersion containing minor concentrations of APFO was used in 2014. All manufacturing following 2014 now uses non-APFO dispersions.

HAZARDOUS WASTE MANAGEMENT

Saint-Gobain is a notified hazardous waste generator and is subject to regulations of RSA 147-A and the New Hampshire Hazardous Waste Rules, specifically Env-Hw 100-1100. EPA has identified PFOA as an emerging contaminant of concern; however, PFOA is not regulated as a listed hazardous waste or a characteristic hazardous waste.

During the site-visit, the NHDES focused on the processes that generate wastes and the wastes generated. A full hazardous waste compliance assessment was not conducted (i.e., hazardous waste container inventory, paperwork review, review of hazardous waste determinations…).

FINDINGS
Based upon observations made during the site-visit, specifically the facility tour, the NHDES did not identify any violations of Env-Hw 100-1100 of the New Hampshire Hazardous Waste Rules.

WASTEWATER / UNDERGROUND INJECTION CONTROL (UIC) – NON-DOMESTIC WASTEWATER PROGRAM

The facility is connected to the Town of Merrimack's POTW. The POTW's industrial pretreatment program is approved by the USEPA to function as the Control Authority to

implement the national General Pretreatment Regulations for Existing and New Sources of Pollution, as codified at 40 CFR Part 403. All sanitary sewage and all process wastewater is discharged to the POTW for disposal. Pretreatment of process wastewater is by static settling of solids. The POTW Pretreatment Manager was present during the site visit. The POTW has conducted regular facility inspections relative to the sewer/wastewater system. Those records are available from the POTW. It was also noted that the existing sewer lines at the facility had been video inspected. No actionable issues of inflow and infiltration were noted. No evidence of bulk disposal or illicit discharges was noted. Saint-Gobain represented that the report by the sewer inspection contractor indicated that no deficiencies of the sewer system were apparent during the inspection.

There are two areas where process wastewater is generated; the cleaning of coating tower pans, and the tote wash out area. The wastewater is collected and treated via settling tanks with discharge to the POTW. The tote wash area is supported by a floor grate to collect wastewater. If a tote cannot be properly cleaned, or a bulk PTFE dispersion is no longer usable, the liquids are removed and hauled off-site for disposal. Coating tower pans are rinsed with water after reclaiming unused dispersion, and the wastewater is discharged to the POTW. Spills are mopped up and discharged to the POTW. There were no floor drains or additional non-domestic discharges noted during the facility tour.

Storm water on site is managed with overland flow with on-site infiltration or is collected using catch basins and underground piping with outfall at the Merrimack River. Catch basins had standing water indicating they were closed and not reaching catch basins. The outfall at the Merrimack was a clear and slow (approximately 2-5 gallons per minute) likely from ground water infiltration. Records show that the facility has an active Multi-Sector General Permit (NHR05B010) and is in compliance. Details and annual reports are available on the EPA website.

Non-contact cooling water generated at the facility historically had been discharged to the Merrimack River under the authority of a NPDES Non-contact Cooling Water General Permit (NCCWGP). At the time of the site visit, the facility was in the final stages of closing out the general permit. The facility manager noted that cooling water at the facility is now managed by a closed recycle system with no discharge.

FINDINGS

There were no violations of Env-Wq 402, Groundwater Discharge Permit & Registration Rules or Env-Wq 401, Best Management Practices for Groundwater Protection identified in the facility or outside of this facility.

AIR EMISSIONS PROGRAM

Saint-Gobain has two basic processes for manufacturing their suite of products. The fabric coating and film casting lines utilize the same general types of equipment that releases air emissions. In the fabric coating operation, the fiberglass cloth is passed through a coater dip pan filled with an aqueous PTFE emulsion, carrier solvent(s), wetting agents and surfactants. The impregnated fabric is then passed through a heating tower where the coating becomes part of the fabric. Each coating tower has three dedicated temperature zones that remove water, volatilize

the surfactant and sinter the resin. The production of film products includes the same sequence of steps, except for the fact that the PTFE coating is temporarily applied to a reusable polyimide or stainless steel carrier belt. The film coating is then removed and the carrier belts are reused.

Since 2000, the facility has operated coating towers which are the source of criteria pollutant, HAPs and RTAP emissions. These towers currently emit through nine vertical and unobstructed dilution stacks that are roof mounted and approximately 30 feet above the roof level.

The second manufacturing operation occurs in the fabrication facility where the manufactured components are assembled into the final product. Operations conducted in this area include gluing components using adhesives, cutting and thermal seaming. Emissions from this area are minor and exhaust through three wall mounted horizontal exhaust fans.

Other air emission sources include fuel burning devices for building heat, emergency power backup and fire suppression. The facility has two boilers that use #2 fuel oil and natural gas as the primary fuel sources and two emergency engines that use ultra-low sulfur diesel as the fuel source. All fuel burning devices are below permitting thresholds with the exception of the emergency engines identified in Table 1as EU20 and EU21. The coating towers use natural gas as the fuel source.

ANNUAL AIR EMISSIONS

Saint-Gobain's air permit (SP-0072) requires annual reporting of emissions and the payment of emission fees. The facility is a minor source for the PM, CO, NOx and SO_2. A minor source means that the facility does not have the potential to emit above the major source thresholds.

Saint-Gobain has permit limits for VOCs and HAPs which classifies the facility as a synthetic minor source for these two pollutant categories. The facility is limited to 50-tons of VOC emissions per year and HAP emissions are limited to 10 tpy for any single HAP and 25 tpy for all HAPs in the aggregate.

The table below lists the facility-wide reported emissions for the period since the last air inspection.

Saint-Gobain Performance Plastics Corporation Annual Actual Facility Emissions						
Year	**NOx (tpy)**	**SO_2 (tpy)**	**CO (tpy)**	**PM (tpy)**	**VOCs (tpy)**	**Total Emissions (tpy)**
Limit	**---**	**---**	**---**	**---**	**50**	**---**
2015	3.25	0.25	2.67	0.07	21.74	27.98
2014	6.64	0.42	5.49	0.14	22.30	34.99
2013	6.95	0.14	5.82	0.14	21.33	34.37

Reported facility emissions for the fuel burning device were calculated using the recommended

emissions factor from the NHDES website. Emissions for VOCs and HAPs / RTAPs are based on factors which assume the entire component of interest from the material safety data sheets is emitted as an uncontrolled emission. The approach and factors used are consistent with those used in the air permit application process and the air permits issued. Saint-Gobain was found to be in compliance with their permitted emission limits.

REGULATED AIR TOXIC POLLUTANTS (RTAPS)

Compliance with the RTAP limits are based on boundary impact levels that are compound specific. Saint-Gobain uses material feedstocks that contain RTAPs, and therefore must demonstrate compliance for their particular process configurations. There are four compliance options available to demonstrate compliance. Exhaust stacks that emit RTAPs and that use either the de minimis or adjusted in-stack concentration methods to show compliance, must discharge vertically and without obstruction. Emissions from the fabric coating and film processes vent through vertical and unobstructed dilution stacks with four of the emission points 130 feet above ground level and five that are 73 feet above ground level. Emissions from the air permit application of adhesives in the fabrication area are released through horizontal wall vents. Therefore, only the use of the in-stack concentration or the modeling approach can be used for demonstrating compliance for the fabrication facility.

FINDINGS

RTAPs -- The most recent Env-A 1400 compliance demonstration submitted as part of air permit application #14-0379 states that the fabrication facility chemical usage met the requirements of Env-A 1400 using the de minimis method. The use of this method is not valid unless the RTAP is emitted through a vertical and unobstructed stack. Based on observations made during the site inspection, it appears that RTAP emissions from the fabrication facility exhaust through three horizontal wall mounted fans. Saint-Gobain provided a follow up evaluation of the fabrication facility using the in-stack concentration method for calculating RTAP emissions. Results from this evaluation demonstrated that the fabrication facility is in compliance with the applicable AALs for the RTAPs emitted.

Black Solid Material -- Emissions from the coating operations emit through 11 roof mounted dilution stacks where the emissions from each coating tower are diluted tenfold prior to emitting to the atmosphere. During the inspection of the roof area, it was noted that a black charred material is present on the undiluted stack pipe which precedes the dilution stack. The black coating builds up and is released in chunks from the rim of the stacks. This material lands on the roof and can be washed from the roof by rain through the drain system. According to Saint-Gobain, the material is a charred fatty acid that is generated in the second heat zone of the coating towers and is the material that is the root cause of odor complaints from abutters. Saint-Gobain stated that the material is removed from the roof and the stack rims monthly by an outside contractor and disposed of as non-hazardous waste.

Dilution Fan Failure – On April 1, 2016, Saint-Gobain reported that the dilution stack booster fan associated with tower coater MS (EU16) became inoperative March 24, 2016. The unit was removed on April 11, 2016, repaired and placed back in service on April 13, 2016. The RTAP demonstration for the coating towers used the de minimis and adjusted in-stack concentration methods to demonstrate compliance with Env-A 1400. For those RTAPs where the adjusted in-stack method was used to demonstrate compliance, NHDES requested that Saint-Gobain conduct

an RTAP evaluation for the period when the dilution fan was inoperative to demonstrate that the facility was in compliance during the fan outage. Saint-Gobain provided a follow up evaluation showing that the facility maintained compliance with the RTAP limits during the period of the fan outage.

Emergency Generator and Fire Pump – Saint-Gobain operates two emergency engines for backup power and fire suppression. The engines are subject to recordkeeping and maintenance requirements. Results from the inspection show that Saint-Gobain has not maintained the required records.

Full Compliance Evaluation – A Full Compliance Evaluation of the current air permit was conducted April 1, 2016 in addition to the partial multimedia inspection. The full report has been presented to Saint-Gobain and the Town of Merrimack under separate copy. The report is available on the NHDES website – One Stop.