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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2948
Plant ID No.:	011-00174
Applicant:	Rubberlite, Inc.
Facility Name:	Huntington
Location:	Cabell County
NAICS Code:	326291 (Foam Production and Fabrication Facility)
Application Type:	Construction
Received Date:	June 7, 2012
Engineer Assigned:	Laura Jennings
Fee Amount:	$1,000.00
Date Received:	June 12, 2012
Complete Date:	July 12, 2012
Due Date:	October 10, 2012
Applicant Ad Date:	June 15, 2012
Newspaper:	*The Herald-Dispatch*
UTM's:	Easting: 4,254.328 km Northing: 376.588 km Zone: 17
Description:	Facility wide permit is requested for an existing foam production facility and the addition of a lamination system. The new installation is anticipated August 1, 2012 if a permit is granted.

DESCRIPTION OF PROCESS

Process Description Overview (as taken from the application):
Rubberlite, Incorporated (Rubberlite) produces foam and then fabricates laminates and other products from the foam produced at the facility and from foam that is purchased from other sources. The facility is contained in five (5) buildings and is either categorized as production or fabrication. Production is the actual foam making equipment at the site. This includes the chemical storage tanks, day tanks, mix tanks, the mix-pour head and the conveyor which the material is poured onto to form the bun. The fabrication at the facility is basically everything else which is developed to take the bun (or delivered buns) and process them into the required finished goods.

Processes have been identified at the facility which emit to either atmosphere or inside the

building. The sources are identified herein and on the following pages of the application. The sources associated with the foam production are labeled as the Foam Production Unit (1S) which this is the entire production unit with the day tanks and storage tanks except the ISO tanks and glycol tanks. The ISO tanks, both storage and day tanks with fugitives, are listed as 10S. Glycol tanks and fugitives are listed as 11S.

Fabrication includes the Bun Press (2S), Hot Melt Laminator No. 1 and 2 (3S & 4S), Buffer (5S), Misting Unit (6S), and Roll Coater (7S). There are splitters and other equipment used at the site in the fabrication process which are not listed as emission sources. This equipment is listed in the attached table “Miscellaneous Fabrication Equipment”.

Additional sources include Solvent Cleaning (Parts Cleaners) (8S), a Lab Production Unit (9S), and Vehicle Activity (12S) for delivery and shipping.

Each of the above sources is discussed in further detail below.

Foam Production:
Rubberlite uses a two-component system consisting of Part A - Isocyanate (ISO) and Part B - Polyol Resin. The two-part system is pumped into a specially designed mixing head that combines the two components to react to form polyurethane foam that is poured onto a lined conveyor. The formulated ratio of isocyanate content to polyol resin is specific to meet customers’ specifications. No auxiliary blowing agents (ABAs) are used as the process uses water as the blowing agent. This facility does not use toluene diisocyanate (TDI).

Methylene diphenyl diiosocyanate (MDI)/polymeric methylene diphenyl diixocyanate (PMDI) is received by tank car and off-loaded into two 7,000 gallon storage tanks. MDI/PMDI is also received in 275 gallon totes and 55 gallon drums and off loaded into three (3) 800 gallon and one (1) 150 gallon day tanks. All tanks are located inside the manufacturing building and are maintained at a constant temperature. ISO tanks are vented to the outside when pumping/filling; however, all other tanks are vented inside the building during such instances.

Material is pumped into 7,000 gallon bulk storage tanks from tanker trucks (2 Polyol and 2 ISO tanks). Based on typical demands, these tanks are filled once per month.

Material is pumped out of bulk storage tanks using diaphragm pumps into 800 gallon day tanks (3-Polyol and 3-ISO) as well as a 150 gallon Poly Lab tank. Material is also pumped from totes into daily batch tanks (Polyol, ISO, EG) and from drums (additives, surfactants, catalysts).

Poly batch chemicals (i.e. catalysts, surfactants, chain extenders, etc.) are batched and mixed overnight. No batching is performed on ISO tanks.

Batched chemicals, ISO, and pigments are pumped separately into the mix head, which blends them together at the conveyor.

Material is poured onto a liner, which is conveyed on an open conveyor. Material rises to maximum peak heights at approximately 1 ½ - 7" high and is cut into 100-foot master rolls (buns) using an automated cut-off saw. Once cut, the roll continues to be conveyed and

is transported to a staging area using an overhead vacuum crane. Master rolls (buns) are allowed to cure for at least 24 hours prior to skiving (slicing). From this point on, the foam is in the Fabrication Area for forming the final products.

Fabrication:
Fabrication is taking the produced bun or master roll and forming it into a finished good. The finished goods include fabricated and non-fabricated products depending on the order that is being prepared. What the order requires also dictates what processes the foam undertakes at the facility. Fabrication includes both the foam that is produced at the site and foam that is purchased from others. The following process descriptions apply to the fabrication area equipment.

Bun Presses (2S):
This is the process of joining buns together to make longer buns or master rolls. An adhesive is applied to each end of the bun. The end of the buns are then pressed together and a bond is formed. The buns can be joined end to end to make a long bun that can then be processed further.

Hot Melt Laminator No. 1 and 2 (3S and 4S):
The Hot Melt Laminators involve the lamination of fabric to foam. Adhesive is stored in a 55 gallon drum and is positioned into drum unloading equipment which heats and pumps the adhesive to the fabrication screen. The foam is unwound in conjunction with the fabric which is going to be laminated onto the foam. The system uses a screen printing technology to apply adhesive in a specific pattern across the width of the foam. The screen tunnel is heated to between 225 and 275 degrees Fahrenheit. The screen tunnel is vented to the outside of the building. As the adhesive is applied to the foam, the fabric is nipped along the top of the substrate and is cut and rolled to various lengths.

Buffer (5S):
The buffer unit allows a foam product to be finished to a tight tolerance. Depending on the required thickness of the foam, the feed foam may be of different thicknesses. The buffer removes the foam to the correct thickness. Fines created during the process enter ductwork that carries it through the wall to an outside cyclone and double baghouse system for removing the fines. The baghouses are sufficient efficiency to allow the exhaust air to be returned into the building. This unit does not vent directly to the outside of the building.

Misting Unit (6S):
The misting unit applies a material to foam that allows a crust or skin to be developed on the foam. The foam material passes through a mist/spray of the material being applied and then is sent through an electric oven for curing the skin producing the final material.

Roll Coater (7S):
Similar to the misting unit, the roll coater is being developed to produce a foam material with a crust or skin. The process uses chemicals and then froths them with air to make a shaving cream consistency froth and applies the froth to the foam. The material then passes through a natural gas oven for drying of the skin.

Solvent Cleaning (8S):
There are four solvent cleaning tanks at the site. One in the production area, two with the stork laminators to soak the screens used to apply the glue, and one small unit in the maintenance shop for general maintenance cleaning issues.

Lab Line (9S):
A lab line has been transported from the R&D location to the Huntington Facility. This equipment is similar to that of the main manufacturing line; however, it is on a much smaller scale. The equipment consists of three 80-gallon tanks that store ISO, POLY, and Butanediol. These chemicals are metered from the tanks to a small mixing/dispensing unit and poured into molds for further analysis. This process is currently not in operation but Rubberlite does have intentions in getting this process operational for R&D purposes. This is a small scale mold production for R&D purposes and it currently does not have ventilation to the outside. Due to its size and capabilities, the lab line's primary purpose is to conduct trials for developing a new product offering going forward.

Vehicle Activity (12S):
Vehicles that bring material to the site and take product from the site travel on public roads and then enter the sites paved areas.

Schedule of Installation:
This is an existing facility which is adding a roll coater. The facility started as a foam fabrication facility that would slice and/or laminate foam products for customers. The initial manufacturing started in 1986. In 1986 the facility did not produce the foam product; it only converted other products to either a final form for use or an intermediate form for customers by slicing (sizing) and/or laminating a foam material with other fabrics, materials, or foams. The foam was supplied by others.

Foam production started in 1999 and the company specialized in Hypur-Cel (automotive, footwear, weather stripping, etc.) product. The company has since added the Visco-Cel (cushioning, ergonomic, and shock resistant foam) products which are made in the same production process (2004). Rubberlite makes very specialized products in a unique production process.

Lamination is already conducted at this facility; however, a new process is being developed and installed at the location. The roll coater process is being shipped to the site for delivery in July 2012 for setup and testing and the operations will begin.

The facility has undertaken a review of the processes (production and fabrication) including the existing operations and is now requesting an air permit for the entire site.

Table 1 - Emissions Unit Table

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type and Date of Change	Control Device
1S	1E	Foam Production Unit	1999	1,314,000 ft/yr	N/A	N/A
2S	2E	Bun press	1989	N/A	N/A	N/A
3S	3E	Hot Melt Laminator No. 1	2007	45.92 ft/min	Relocated	N/A
4S	4E	Hot Melt Laminator No. 2	2012	45.92 ft/min	New	N/A
5S	5E	Buffer	2005	30 ft/min Max.	N/A	1C, 2C
6S	6E	Misting Unit	2010	27.0 ft/min	N/A	N/A
7S	7E	Roll Coater with Apollo Dryer	2012	16.4 ft/min 6.54 MMBtu/hr	New	N/A
8S	8E	Solvent Cleaning Stations	1999/ 2007	N/A	N/A	N/A
9S	9E	Lab Production Unit (R&D)	2011	N/A	N/A	N/A
10S	10E	ISO Tanks	1999	2 - 7,000 gallon 3 - 800 gallon	N/A	N/A
11S	11E	Glycol Tanks	1999	5 to 330 gallons	N/A	N/A
12S	12E	Vehicle Activity	1989	N/A	N/A	N/A

Control Devices

Control Device ID	Control Device Description	Year Installed/ Modified	Design Capacity
1C	Sternvent single-stage mechanical collector; model no. CYA-4800	2005	n/a
2C (BH1, BH2)	Sternvent baghouse; model no. AFAE 5612D	2005	99.9% (urethane dust)

Table 2 - Miscellaneous Fabrication Equipment

Equipment Number	Equipment Name	Model Number	Manufacturer	Description
CLKR	Clicker	Model B	United Shoe	Stamps small shapes for physical testing and samples
INSPBRD	Inspection Board	TM-1360	Joseph Perni	A large light board which when fabric is passed over for inspection
LS01	Loop Splitter #1	H-42A	F and K	A machine that when buns of material or master rolls are pass through it is cut down into thin sheets.
LS02	Loop Splitter #2	H-42A	F and K	
LS03	Loop Splitter #3	H-42A	F and K	
LS04	Loop Splitter #4	H-42A	F and K	
PSALAM01	PSA Laminator #1	W-56	WESCO	Feeds rolls of pressure sensitive adhesive and rolls of material through a set of nip rollers which bonds the two together.
PSALAM02	PSA Laminator #2	N/A	Control Desi	
PSALAM03	PSA Laminator #3	N/A	Control Desi	
PSALAM04	PSA Laminator #4	N/A	Control Desi	
RELIANT	Reliant	Power B	Reliant	A webbed adhesive is placed between foam and fabric and then heated as material passes through machine
RS01	Roll Splitter #1	K-11	F and K	Material is placed on long conveyors and is passed back and forth cutting thin layers off with each pass.
RS02	Roll Splitter #2	K-11	F and K	
RS03	Roll Splitter #3	K-11	F and K	
RS04	Roll Splitter #4	K-1	F and K	
RS05	Roll Splitter #5	K-21	F and K	
SAW01	Saw #1	A1	N/A	Operator will use this to square up the edges of buns before sending them to bun press
SAW02	Saw #2	CL-1	N/A	
SAW03	Saw #3	LVR-1	N/A	
SAW04	Saw #4	CL-1	N/A	
SHTR	Sheeter	WA-S-6-	Rosenthal	Rolls of material are taken and cut different widths
SLIT01	Slitter #1	500	Lever	
SLIT03	Slitter #3		Collins Craf	
SLIT04	Slitter #4	F600	FEBA	

STRP01	Stripping Machine #1	N/A	Control Desi	
STRP02	Stripping Machine #2	N/A	Control Desi	
STRP03	Stripping Machine #3	N/A	Control Desi	
STRP04	Stripping Machine #4	N/A	Control Desi	
VS02	Vacuum Splitter #2	H-24A	F and K	Buns of material are placed on a vacuum table and is passed back and forth cutting into thin sheets with each pass.
VS03	Vacuum Splitter #3	H-14A	F and K	
VS04	Vacuum Splitter #4	H-24A	F and K	

SITE INSPECTION

A site visit was conducted by the writer on August 23, 2012 along with Corky Dowdy, Safety Manager of Rubberlite, Michael Little, Director of Organizational Development & Human Resources of Rubberlite, and Patrick Ward, Rubberlite's consultant from Potesta Enginnering.

A walking tour of the operations was provided and included each of the emission units identified in the equipment table of the application. The tour of the facility agreed with the information provided in the application. Additionally, the pre-draft permit was discussed at the conclusion of the walking tour and follow-up items were identified. All follow-up items have been resolved.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Rubberlite uses a two-component system consisting of Part A - Isocyanate (MDI/PMDI) and Part B-Polyol Resin. The Part B is made up of several components called catalyst, surfactants, chain extenders, and pigments. The two-part system is pumped into a specially designed mixing head that combines the two-components to react to form polyurethane foam that is poured onto a lined conveyor. The formulated ratio of isocyanate content to polyol resin is specific to meet customers' specifications. The process uses water as the blowing agent. Rubberlite produces four different Series of products that vary in foam density.

Rubberlite's foam gives off VOCs throughout its entire life cycle which is estimated to be 30 years. The rate that the VOCs are given off has many variables. During the production of the products there are some different points that VOCs can be given off. During the foaming of the products some are driven off. VOCs are driven off and pass up the

ventilation system that is installed above the manufacturing conveyor. During the next step of curing and storage is where trace amounts are driven off. These are driven off and pass up the ventilation system that is installed above the manufacturing conveyor. The next step in the process is where the foam slabs are cut into the customer required thickness. At this stage, there is not a ventilation system to capture the VOCs. Where there is not a specific emission factor that can calculate the exact rate that VOCs are leaving the foam, it is assumed that all 100% of the VOCs are driven off while the foam is in Rubberlite's facility.

Emission calculations and assumptions were reviewed and verified by the writer.

Production Process Emissions [1E]:
To calculate the worst case scenario of VOC emissions, calculations were made for each of the 32 products and each eminent based on the formulation for each product using the maximum time taken to run a full batch and the maximum number of linear feet of foam that can be run for any product. Process limitations that are described in the permit application were also taken into consideration. Rubberlite can only run one max run per day. The annual emissions are calculated based on the maximum emissions for one batch and multiplying that by 365 days. The hourly emissions are were calculated by taking the total amount of VOC that was calculated to be driven off and dividing by the minimum amount of time that the foam is on site, which is 24 hours.

The worst case scenario for the MDI calculation assumes the volume displaced by the foam is saturated with MDI/PMDI. The concentration is therefore equal to the vapor pressure of MDI at the process temperature.

The worst case scenario is a good way to look at what the emissions would be if Rubberlite ran at maximum capacity. Rubberlite has reviewed the historical data and the potential growth of the company and has indicated that the worst case scenario is far away in the future. Emissions are based on the maximum capacity of 2,135,024 linear feet of foam.

Bun Press Emissions [2E]:
The adhesives used to join buns are in a pail and are applied manually with a brush to the end of the buns which are to be glued together. The VOC and HAP emissions are based on the weight percent of the material in the glue. The highest VOC and HAP emissions are used to establish emissions from this process. Emissions are based on glue usage of 2,000 gallons/year.

Hot Melt Laminator Emissions [3E, 4E]:
The adhesive laminators are a screen application type laminator that uses glue to laminate foam with other materials. The glue is heated by an electric heating device so it can be spread on the laminated side of the foam material to which the lamination material will be applied. VOC and HAP emissions are based on an annual MDI glue usage of 234,000 pounds. The other glues do not contain VOC or HAP emissions and are not included in the MDI based glue usage.

Buffer Emissions [5E]:

Buffer emissions are based on the run time of the unit and the amount of material removed for the operation. This unit buffs foam to a tighter tolerance which is required by some customers. This unit is controlled by a baghouse system and then vents back into the building. The building is shown as a control device in addition to the baghouse. There are variances in the operation of the unit and the type of foam being buffered. The missions are based on the worst case of removal in total mass removed that represents a 20 percent buffer. PM, PM_{10}, and $PM_{2.5}$ are assumed to be equal for this process. Emission calculations are based on total volume removed, a baghouse efficiency of 99.90% and a building efficiency of 75%.

Misting Unit Emissions [6E]:
The misting unit uses a material which is applied to allow a crust or skin to form on the foam. Emissions are based on the amount of VOC and Formaldehyde in the material. Annual emissions are based on a maximum usage of 200,000 pounds of misting agent.

Roll Coater with Apollo Dryer Emissions [7E]:
The roll coater uses a material which is applied to allow a crust or skin to form on the foam. The hourly emissions are based on the maximum width of material and maximum thickness of the coat. The annual emissions are based on the yearly usage of PF 4211. The roll coater unit has a natural gas fueled Apollo Dryer. Emissions from the dryer were calculated based on emission factors from AP-42, Section 1.4 for natural gas combustion for the criteria pollutants and for VOC-HAPs. It was assumed that PM, PM_{10}, and $PM_{2.5}$ are equal.

Multiple Parts Washer Emissions [8E]:
The parts washer systems are different in size and cleaning fluid throughout the site. AP-42, Table 4.6-2 emission factors were used to calculate the emissions from all of the parts washers on site. An emissions reduction factor of 13% was used for covers on the parts washers. Annual emissions are based on 8,760 hours per year. There are 4 units at the site that are included in the calculations. Glycol Ether emissions are only present in the solvent used in the Dip Tank located within the production unit and are therefore calculated based on one unit.

ISO Tank Emissions [10E]:
Working losses occur when MDI/PMDI vapor that is present over the liquid in a storage tank is displaced from the tank by addition of MDI/PMDI liquid during tank filling. The worst case estimate was based on the size and number and size of the storage tanks, the annual throughput. The emission calculations were based on the average storage temperature rather than the maximum storage temperature because the material is stored indoors at a constant temperature. There are no breathing losses associated with the process. The emissions are negligible and will not have permitted emissions, consistent with DAQ policy for tanks less than 20,000 gallon capacity.

Ethylene Glycol Tank Emissions [11E]:
The emissions are based on the total emissions of EG from multiple storage tanks with sizes ranging from 5 - 330 gallons. Breathing losses occur when EG vapor releases to the air from a storage tank. Working losses occur when EG vapor that is present over the

liquid in a storage tank is displaced from the tank by the addition of EG liquid during tank filling. The emissions are negligible and will not have permitted emissions, consistent with DAQ policy for tanks less than 20,000 gallon capacity.

Fugitive Emissions:
[10E] Fugitive emissions are air release volatile chemicals that typically occur due to leaks from fittings and seals in chemical process equipment, transfer operations, or storage systems. Direct measurement or monitoring data can be used to estimate fugitive emissions whenever possible. In the absence of direct measurement or monitoring data, industrial hygiene data on MDI concentrations in the workplace can be used to estimate MDI or MDI/PMDI fugitive emissions. This technique can only be used if the industrial hygiene data are representative of average concentrations throughout the year and throughout the building. The ISO storage tank process is carried out in 281,250 cubic feet area, 8 hours per day, 5 days per week, and 50 weeks per year. The area averages 5 air changes per hour and the MDI/PMDI concentration is assumed to be 1ppb.

[11E] Fugitive losses occur when EG liquid leaks from fittings and seals in process equipment. The Ethylene Glycol storage tank process is carried out in 281,250 cubic feet area, 8 hours per day, 5 days per week, and 50 weeks per year. The area averages 5 air changes per hour and the MDI/PMDI concentration is assumed to be 1ppb.

[12E] Vehicle Activity - Paved Haulroads. The fugitive emissions calculations are based on the trucks entering and leaving the site. Trucks are predominantly on paved public roadways because the roadways between the buildings are city roads. The fugitive emissions are from the vehicles when traveling on Rubberlite property only (backing and pulling away from the buildings and driving off the city roads). Emission factors and calculations are based on AP-42, Section 13.2.1.

Table 3 - Emission Points Data Summary

Emission Point ID	Emission Unit ID	Control Device	Regulated Pollutant	Maximum Potential Controlled Emissions	
				lb/hr	tpy
1E 9E	1S 9S	n/a	VOC	3.44	15.08
			MDI	0.01	0.01
			Total HAP	0.01	0.01
2E	2S	n/a	VOC	2.74	5.48
			Toluene	1.38	2.76
			Total HAP	1.38	2.76
3E 4E	3S 4S	n/a	VOC	0.50	1.17
			MDI	0.50	1.17
			Total HAP	0.50	1.17

5E	5S	1C 2C	$PM/PM_{10}/PM_{2.5}$	0.01	0.01
6E	6S	n/a	VOC	0.62	0.40
			Formaldehyde	0.62	0.40
			Total HAP	0.62	0.40
7E	7S	n/a	CO	0.56	2.43
			NO_X	0.66	2.90
			$PM/PM_{10}/PM_{2.5}$	0.06	0.22
			SO_2	0.01	0.02
			VOC	2.00	0.26
			HAPs - VOC	0.02	0.06
			Ethylene Glycol	0.02	0.01
			Formaldehyde	1.94	0.102
			Total HAP	1.98	0.13
8E	8S	n/a	VOC	0.27	1.15
			Glycol Ether EP	0.03	0.09
			Total HAPs	0.03	0.09
10E	10S	n/a	VOC	0.01	0.01
			MDI	0.01	0.01
			Total HAPs	0.01	0.01
11E	11S	n/a	VOC	0.01	0.01
			Ethylene Glycol	0.01	0.01
			Total HAPs	0.01	0.01
Fugitive Emissions					
10E	10S	n/a	VOC	0.01	0.01
			MDI	0.01	0.01
			Total HAPs	0.01	0.01
11E	11S	n/a	VOC	0.01	0.01
			Glycol	0.01	0.01
			Total HAPs	0.01	0.01
12E	12S	n/a	PM	1.35	1.01
			PM10	0.25	0.19

			PM2.5	0.05	0.04

Listed below in Table 5 is a summary of all emissions for the site, including fugitive emissions.

Table 5 - Total Emissions Summary

Potential to Emit		
Regulated Pollutant	**Controlled Emissions**	
	lb/hr	**tpy**
CO	0.56	2.43
NO_X	0.66	2.90
$PM_{2.5}$	0.12	0.27
PM_{10}	0.32	0.42
PM	1.42	1.24
SO_2	0.01	0.02
VOC	9.57	23.55
Formaldehyde	2.56	1,000 lbs
MDI	0.51	1.18
Toluene	1.38	2.76
Glycol Ethers	0.03	0.09
Ethylene Glycol	0.03	0.02
Total HAPs	4.56	4.60

REGULATORY APPLICABILITY

The State and Federal Regulations in this section have been reviewed by the writer for applicability to Rubberlite, Inc based on the information provided in the permit application.

State Regulations:

45CSR2 TO PREVENT AND CONTROL PARTICULATE AIR POLLUTION FROM COMBUSTION OF FUEL IN INDIRECT HEAT EXCHANGERS

The Roll Coater with Apollo Dryer [7S] is subject to 45CSR2 because it meets the definition of a fuel burning unit. It is subject to the 10% opacity requirements in Section 3. It is exempt from sections 4, 5, 6, 8, and 9 because the heat input is less than 10 MMBtu/hr and meets the exemption of §45-2-11.1. Rubberlite will demonstrate compliance with the opacity

requirements by demonstrating compliance with the permit requirements.

45CSR7 TO PREVENT AND CONTROL PARTICULATE MATTER AIR POLLUTION FROM MANUFACTURING PROCESSES AND ASSOCIATED OPERATIONS

Rubberlite is not subject to the provisions of 45CSR7 for the Roll Coater [7S] because the particulate matter emissions are regulated by 45CSR2 and meet the exemption of §45-7-10.1.

Rubberlite is subject to the particulate matter emission limits of §45-7-4.1 for the Buffer Unit [5S]. The source operation type is 'a' because it is a manufacturing process that involving a physical change. The process weight rate for the 20% buffer is 134 lb/hr and the corresponding allowable particulate matter emission rate is 0.17 lb/hr. Rubberlite has demonstrated compliance with this requirement with a potential particulate matter emission limit of 0.01 lb/hr which is less than the required limit for 45CSR7.

Fugitive emissions are minimized by have the Buffer operations [5S] performed inside the building and by use of paved haul roads [12S] at the site, both demonstrating compliance with §45-7-5.

Compliance with the opacity requirements of 45CSR7 is based on the cyclone and baghouse operations for control device and the design of the system that cleans the air and routes the clean air back into the building after being filtered at the exhaust point inside the building.

45CSR10 TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF SULFUR OXIDES

The Roll Coater with Apollo Dryer [7S] is subject to 45CSR10 because it meets the definition of a fuel burning unit. It is exempt from sections 3 and sections 6 through 8 because the heat input is less than 10 MMBtu/hr and meets the exemption of §45-10-10.1 and the natural gas exemption of §45-10-10.3.

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

The facility meets the definition of a "stationary source" per 45CSR13-2.24.b and is subject to the requirements of 45CSR13 and has met the permitting requirements for a construction permit by submitting a complete permit application, paying the application fee, and publishing a Class I legal advertisement in *The Herald-Dispatch* on June 15, 2012.

45CSR21 REGULATION TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF VOLATILE ORGANIC COMPOUNDS

Rubberlite meets the general scope of 45CSR21 because it is a source of VOC emissions located in Cabell County. Cabell County is one of the applicable counties that this rule applies.

Section 40 applies to Other Facilities that Emit Volatile Organic Compound (VOC). This section 40 applies to any facility that has aggregate maximum theoretical emissions of 100 tons or more of VOCs per calendar year in the absence of control devices. The maximum potential uncontrolled VOC emissions at the Rubberlite facility are below this applicability threshold defined in §45-21-40.1.a.

Rubberlite is subject to the certification, recordkeeping, and reporting requirements of section 40.6.b. Compliance with these requirements will be demonstrated by compliance with permit requirements.

45CSR22 AIR QUALITY MANAGEMENT FEE PROGRAM

Rubberlite is subject to the fee program of 45CSR22 because it is a minor source and not subject to any NSPS Standards that would require 45CSR30 fees.

45CSR27 TO PREVENT AND CONTROL THE EMISSIONS OF TOXIC AIR POLLUTANTS

Rubberlite is not subject to 45CSR27 because even the emissions of Formaldehyde from the Misting Unit [6S] and the Roll Coater and Apollo Dryer [7S], do not exceed 1,000 pounds per year per 45CSR27, Table A.

A permit condition will be written to limit the Formaldehyde emissions to less than 1,000 pounds on an annual basis (12-month rolling total).

45CSR29 RULE REQUIRING THE SUBMISSION OF EMISSION STATEMENTS FOR VOLATILE ORGANIC COMPOUND EMISSIONS AND OXIDES OF NITROGEN EMISSIONS

This rule requires the submission of an emission statement from owners and operators of stationary sources emitting volatile organic compounds (VOCs) or oxides of nitrogen (Nox). This rule applies to sources located in Putnam, Kanawha, Cabell, Wayne, Wood, and Greenbrier Counties.

The facility is not subject to 45CSR29 because it meets the exception requirements of 45CSR29-3.2 because it emits less than 25 tons per year of plant-wide actual VOC emissions and are included in the Director's base-year and periodic emissions inventories. When the permit is issued for new

facilities, the paperwork is submitted to add them to the database.

45CSR30 REQUIREMENTS FOR OPERATING PERMITS

The facility does not meet the definition of a major source as defined in 45CSR30-2.26

45CSR34 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The applicant is not subject to 45CSR34 because it is not subject to federal regulations contained in 40 CFR Parts 61, 63, and 65.

Federal Regulations:

40 CFR PART 60 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Rubberlite is not subject to any NSPS Standards. They are not subject to Subpart Kb (VOC Storage) because the storage tank sizes are below the applicability threshold. They are not subject to Subpart VVa (VOC Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI)) because they do not meet the definition of SOCMI. They are not subject to Subpart DDD (VOC Emissions from the Polymer Manufacturing Industry) because they do not manufacture polypropylene, polyethylene polystyrene, or poly (ethylene terephthalate).

40 CFR PART 63 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

Subpart MMMMM NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS: FLEXIBLE POLYURETHANE FOAM FABRICATION OPERATIONS

Rubberlite is not subject to this Subpart because they are not a major source of Hazardous Air Pollutants (HAPs).

Subpart III NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR FLEXIBLE POLYURETHANE FOAM PRODUCTION

Rubberlite is not subject to this Subpart because they are not a major source of Hazardous Air Pollutants (HAPs).

Subpart OOOOOO NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR FLEXIBLE POLYURETHANE FOAM

PRODUCTION AND FABRICATION AREA SOURCES

Unless otherwise stated, WVDEP DAQ has not determined whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40CFR63, including the area source air toxics provisions of 40CFR63, Subparts OOOOOO. [§§63.11414- 63.11420]

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Material Safety Data Sheets were provided for all materials used in the production process. The following family of materials were included: Isocyanates (ISO), Polyols, Colorants, Pigments, Light Stabilizers, Surfactants, Fillers, Catalysts, Chain Extenders, Dispersants, Fire Retardants, Antimicrobials, Holt Melt Lamination Adhesives, Bun Press Adhesives, Solvent Cleaners/ Parts Washers, Roll Coating Material, Misting Unit Material, and Reliant Web Adhesive.

Information is provided below for each of the hazardous air pollutants that have potential to be emitted from the site from the activities identified in this engineering evaluation.

Ethylene Glycol:
Ethylene glycol has many uses, including as antifreeze in cooling and heating systems, in hydraulic brake fluids, and as a solvent. Acute (short-term) exposure of humans to ethylene glycol by ingesting large quantities causes three stages of health effects: central nervous system (CNS) depression, followed by cardiopulmonary effects, and later renal damage. The only effects noted in one study of individuals exposed to low levels of ethylene glycol by inhalation for about a month were throat and upper respiratory tract irritation. Rats and mice chronically (long-term) exposed to ethylene glycol in their diet exhibited signs of kidney toxicity and liver effects. Several studies of rodents exposed orally or by inhalation showed ethylene glycol to be fetotoxic. An epidemiologic study on renal cancer mortality did not find an increased risk for workers exposed to ethylene glycol. EPA has not classified ethylene glycol for carcinogenicity.

4,4'-Methylenediphenyl Diisocyantate (MDI):
The commercial form of 4,4'-methylenediphenyl diisocyanate (MDI) is used to produce polyurethane foams. Acute (short-term) inhalation of high concentrations of MDI may cause sensitization and asthma in humans. Acute dermal contact with MDI has induced dermatitis and eczema in workers. MDI has been observed to irritate the skin and eyes of rabbits. Chronic (long-term) inhalation exposure to MDI has been shown to cause asthma, dyspnea, and other respiratory impairments in workers. Respiratory effects have also been observed in animals. No adequate information is available on the reproductive, developmental, or carcinogenic effects of MDI in humans. EPA has classified MDI as a Group D, not classifiable as to human carcinogenicity.

Toluene:
The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. `Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies. The major use of toluene is as a mixture added to gasoline to improve octane ratings. Toluene is also used to produce benzene and as a solvent in paints, coatings, synthetic fragrances, adhesives, inks, and cleaning agents. Toluene is also used in the production of polymers used to make nylon, plastic soda bottles, and polyurethanes and for pharmaceuticals, dyes, cosmetic nail products, and the synthesis of organic chemicals.

Formaldehyde:
Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

Glycol Ethers:
Glycol ethers have many uses; these include use as solvents and as an ingredient in cleaning compounds, liquid soaps, and cosmetics. Acute (short-term) exposure to high levels of the glycol ethers in humans results in narcosis, pulmonary edema, and severe liver and kidney damage. Chronic (long-term) exposure to the glycol ethers in humans may result in neurological and blood effects, including fatigue, nausea, tremor, and anemia. No information is available on the reproductive, developmental, or carcinogenic effects of the glycol ethers in humans. Animal studies have reported reproductive and developmental effects from inhalation and oral exposure to the glycol ethers. EPA has not classified the glycol ethers for carcinogenicity. The glycol ethers are used as solvents for resins, lacquers, paints, varnishes, gum, perfume, dyes, inks, as a constituent of paints and pastes, cleaning compounds, liquid soaps, cosmetics, and hydraulic fluids. 2-Butoxyethanol is used in the production of cleaning agents and as a general solvent.

AIR QUALITY IMPACT ANALYSIS

The facility does not meet the definition of a major source; therefore, air modeling is not required for this construction permit evaluation.

MONITORING OF OPERATIONS

Listed in this section are monitoring and/or recordkeeping requirements.

- Monthly Formaldehyde emissions
- Opacity monitoring and recordkeeping for compliance with 45CSR2
- Foam production
- Buffer volume
- Material usage for V4055, glue, misting agent, PF 4211, ISO, Hycar
- NG fuel usage for the Roll Coater and Apollo Dryer
- Filter maintenance

CHANGES TO PERMIT

There are no existing air quality permits at the facility.

RECOMMENDATION TO DIRECTOR

It is the recommendation of the writer that permit R13-2948 be granted to Rubberlite, Inc., Huntington facility located in Cabell County, WV. Based on the information provided in the permit application including all supplemental information received, the applicant meets all applicable state and federal regulations.

_____
Laura M. Jennings
Permit Engineer

_____
Date