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# ENGINEERING EVALUATION / FACT SHEET

## BACKGROUND INFORMATION

| | |
|---|---|
| Application No.: | R13-2948B |
| Plant ID No.: | 011-00174 |
| Applicant: | Rubberlite Inc. |
| Facility Name: | Huntington Facility |
| Location: | Huntington |
| NAICS Code: | 326291 |
| Application Type: | Modification |
| Received Date: | September 16, 2015 |
| Engineer Assigned: | Steven R. Pursley, PE |
| Fee Amount: | $2,000.00 |
| Date Received: | September 17, 2015 |
| Complete Date: | November 25, 2015 |
| Due Date: | February 23, 2016 |
| Applicant Ad Date: | September 22, 2015 |
| Newspaper: | *The Herald Dispatch* |
| UTM's: | Easting: 376.625 km Northing: 4,254.558 km Zone: 17 |
| Description: | Addition of a foam production line, a bun press, hot melt laminator, three (3) roll coaters, a solvent cleaning station, a flame laminator and an emergency generator. |

## DESCRIPTION OF PROCESS

Rubberlite, Incorporated 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 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. There is one existing production line and one proposed production line. 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.

Fabrication includes the Bun Presses, Hot Melt Laminators, Flame Laminator, Buffer, Misting Unit, and Roll Coater. There are splitters and other equipment used at the site in the fabrication process which are not emission sources.

Additional sources include solvent cleaning, a lab production unit, emergency generator and vehicle activity for delivery and shipping.

**Foam Production Units**

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 10 - 15 feet 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.

The existing foam production unit (Foam Production Unit No. 1, 1S) is the entire production unit except for the ISO tanks and glycol tanks (which are listed separately in the existing permit as 10S and 11S respectively). There is no change proposed for the existing unit. The applicant is proposing to add another production line (Foam Production Unit No. 2, 15S) along with ISO tanks (16S) and glycol tanks (17S).

**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

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. The existing bun press is 2S. The new, proposed, bun press is 18S.

Hot Melt Laminators

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. The existing hot melt laminators are No. 1 (3S) and No. 2 (4S). The new, proposed, hot melt laminator is No. 3 (19S).

Buffer

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:

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 Coaters:

Similar to the misting unit, the roll coaters allow the crust or skin to be put on the foam. 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 an oven for drying of the skin.

There are two existing roll coaters. Roll coater No. 1 (7S) has a natural gas oven which dries the coating. Roll Coater No. 2 (13S) has an infrared oven which cures the coating. There are three (3) proposed roll coaters (20S, 21S, and 22S) which will be similar to Roll Coater No. 1 with a natural gas oven.

Production Solvent Cleaning:

There is one existing production solvent cleaning station (8S) at the site and one proposed for the new production unit (23S).

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 (although it WAS included in the original permit R13-2948) 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.

Solvent Cleaning Stations:

There are four solvent cleaning stations (14S) that are used in different areas of the facility (one for roll coating, two in glue lamination, and one in maintenance.) The solvents used in these parts washers are different than used in the production solvent cleaning stations and so are identified as a separate source.

Emergency Generator (24S):

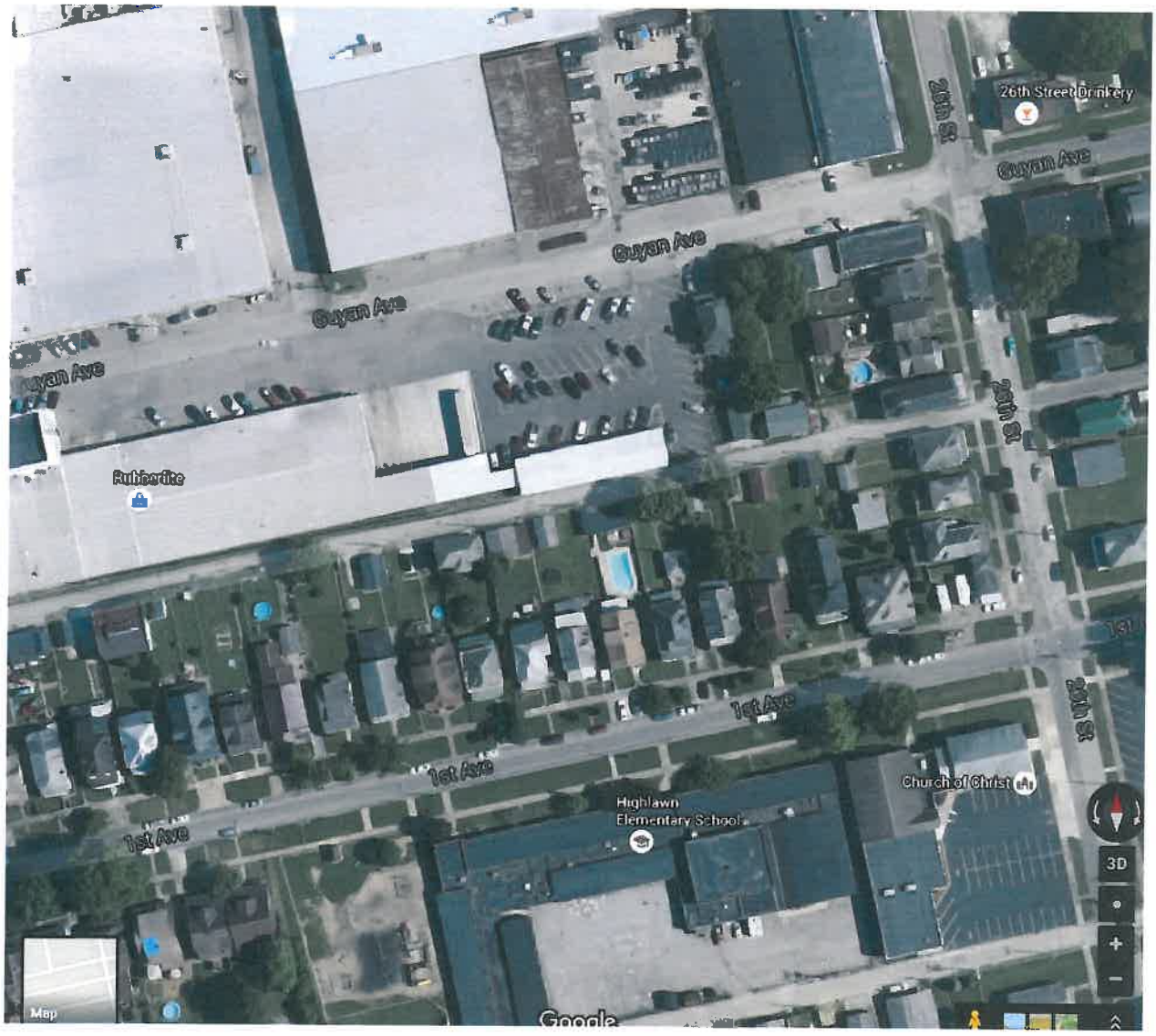
The facility has an existing emergency generator that was omitted when the applicant obtained their previous permit.

Flame Laminator (25S):

A flame laminator applies the lamination material to the foam by heating (natural gas flame) the foam to the point where the foam material becomes sticky allowing the laminate material to adhere to the foam without glue. As the foam cools the laminate material becomes permanently adhered to the foam.

SITE INSPECTION

Dan Baurle of DAQs Compliance and Enforcement section conducted a full on site inspection of the facility on December 16, 2016, and found the facility to be in compliance. The facility is located across the street from many homes and is less than 100 yards from an elementary school and a church. Below is a google map image of the facility and surrounding area.




ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The facilities existing PTE is uncertain. The permit application, Engineering Evaluation R13-2948A and permit R13-2948A all indicate different PTEs. In order to be conservative (regarding the increase in emissions) I set the existing baseline for each pollutant at the smallest of the three numbers. Based on that, emissions from the existing facility are as follows:

| Regulated Pollutant | lb/hr | tpy |
|---|---|---|
| $PM_{2.5}$ | 0.07 | 0.23 |
| $PM_{10}$ | 0.07 | 0.23 |
| PM | 0.07 | 0.23 |
| CO | 0.56 | 2.43 |
| $NO_X$ | 0.66 | 2.90 |
| $SO_2$ | 0.01 | 0.02 |
| VOC | 9.77 | 24.16 |
| Total HAP | 2.69 | 4.75 |
| Acylonitrile | <0.01 | <0.01 |
| Ethyl Acrylate | <0.01 | <0.01 |
| Ethyleneimene | <0.01 | <0.01 |
| Vinyl Chloride | 0.06 | 0.26 |

Proposed emissions from the modified facility are based on the following:

Foam Production Units

Emissions from the foam production units vary depending on the specific formula which is being produced. Therefore, Rubberlite calculated emissions for various formulas on a mass balance basis and selected the highest result.

| Source | VOCs | | MDI | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Foam Prod. Unit 1 (1S) | 3.44 | 15.08 | 0.01 | 0.01 |
| Foam Prod. Unit 2 (15S) | 3.44 | 15.08 | 0.01 | 0.01 |
| **Total** | **6.89** | **30.16** | **0.02** | **0.02** |

Bun Presses

Adhesives are used to join buns. The glue is in a pail and is applied manually with a brush to the end of the buns. 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 the emissions from this process. Each unit uses a maximum of 300 gallons per year with an estimated 0.5 gallons per hour. Total use is 600 gallons per year with an estimated 1.0 gallon per hour.

| Source | VOCs | | Toluene | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Bun Press No. 1 (2S) | 2.74 | 0.82 | 1.38 | 0.41 |
| Bun Press No. 2 (18S) | 2.74 | 0.82 | 1.38 | 0.41 |
| **Total** | **5.48** | **1.64** | **2.76** | **0.82** |

Hot Melt Laminators

The Hot Melt Laminators use glue to laminate foam with other materials. The glue is heated by an electric heating device so that it can be spread on the laminated side of the foam. VOC and HAP calculations were performed using a mass balance. Total maximum usage for all three units were estimated at 75 pounds per hour and 351,000 pounds per year.

| Source | VOCs | | MDI | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Glue Laminator No.1 (3S) | 1.25 | 2.93 | 1.25 | 2.93 |
| Glue Laminator No.2 (3S) | 1.25 | 2.93 | 1.25 | 2.93 |
| Glue Laminator No.3 (3S) | 1.25 | 2.93 | 1.25 | 2.93 |
| **Total** | **3.75** | **8.79** | **3.75** | **8.79** |

Buffer Unit

Buffer emissions are based on the run time of the unit and the amount of material removed by the operation. The unit is controlled by a baghouse which vents back into the building. Therefore, both the baghouse and the building are utilized as control devices. Annual emissions are based on 2,080 hours of operation per year.

| Source | $PM/PM_{10}/PM_{2.5}$ | |
|---|---|---|
| | lb/hr | tpy |
| Buffer Unit (5S) | 0.01 | 0.01 |
| **Total** | **0.01** | **0.01** |

Misting Unit

The misting unit uses a material which is applied to allow a crust or skin to form on the foam. VOC and HAP (formaldehyde) emissions are calculated using a material balance.

| Source | VOCs | | Formaldehyde | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Misting Unit (6S) | 0.62 | 0.40 | 0.62 | 0.40 |
| **Total** | **0.62** | **0.40** | **0.62** | **0.40** |

Roll Coaters

The roll coaters use a material which is applied to allow a crust or skin to form on the foam. The hourly VOC and HAP emissions are based on the maximum width of material and maximum thickness of the coat. The annual emissions are based on the yearly usage. One existing roll coater unit (7S) and all three new roll coater units (20S-22S) have a natural gas fueled Apollo Dryer. Emissions from the dryers 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, PM10, and PM2.5 are equal. The existing permit has no limits for HAP emissions from the roll coaters, only a facility wide limit of 25 tpy for aggregated haps and 10 tons per year of any individual HAP. Additionally, the permit appears to only require monitoring of the roll coaters to determine compliance with the facility wide limit. The new permit will correct this. The facility requested a limit of 25 tpy for total HAP emissions from the roll coaters. However, in the writers opinion, this would make the facility a major source of HAPs. Therefore, the following annual HAP emissions were limited by taking 24.99 tpy and subtracting the annual HAP emissions from combustion sources and the flame laminator (i.e. all HAP emissions that cannot be calculated using a mass balance approach).

Coating Emissions

| Source | VOCs | | Total HAPs | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Roll Coater No. 1 (7S) | 40 | 43.00 | 15 | 22.93 |
| Roll Coater No. 2 (13S) | 40 | | 15 | |
| Roll Coater No. 3 (20S) | 40 | | 15 | |
| Roll Coater No. 4 (21S) | 40 | | 15 | |
| Roll Coater No. 5 (22S) | 40 | | 15 | |
| **Total** | **200** | **43** | **75** | **22.93** |

Natural gas fired dryer emissions

| | CO | | $NO_x$ | | $PM/PM_{2.5}$ | | $SO_2$ | | VOCs | | HAPs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| Dryer 1 | 0.56 | 2.43 | 0.66 | 2.90 | 0.06 | 0.22 | 0.01 | 0.02 | 0.04 | 0.16 | 0.02 | 0.06 |
| Dryer 3 | 0.56 | 2.43 | 0.66 | 2.90 | 0.06 | 0.22 | 0.01 | 0.02 | 0.04 | 0.16 | 0.02 | 0.06 |
| Dryer 4 | 0.56 | 2.43 | 0.66 | 2.90 | 0.06 | 0.22 | 0.01 | 0.02 | 0.04 | 0.16 | 0.02 | 0.06 |
| Dryer 5 | 0.56 | 2.43 | 0.66 | 2.90 | 0.06 | 0.22 | 0.01 | 0.02 | 0.04 | 0.16 | 0.02 | 0.06 |
| **Total** | **2.24** | **9.72** | **2.64** | **11.6** | **0.24** | **0.88** | **0.04** | **0.08** | **0.16** | **0.64** | **0.08** | **0.24** |

Multiple Parts Washer Emissions (8S, 23S and 14S)

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 6 units at the site (14S actually consists of four different existing stations) that are included in the calculations.

| Source | VOCs | | HAPs | |
|---|---|---|---|---|
| | lb/hr | tpy | lb/hr | tpy |
| Production Part Washer (8S) | 0.07 | 0.29 | -- | -- |
| Production Part Washer (23S) | 0.07 | 0.29 | -- | -- |
| Part Washer (14S) | 0.26 | 1.15 | 0.01 | 0.01 |
| **Total** | **0.4** | **1.73** | **0.01** | **0.01** |

Vehicle Activity

Haulroad emissions were based on AP-42 Chapter 13. All haul roads are paved and no control efficiency was claimed.

| PM | | $PM_{10}$ | | $PM_{2.5}$ | |
|---|---|---|---|---|---|
| lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| 2.70 | 2.03 | 0.50 | 0.38 | 0.10 | 0.08 |

Emergency Generator No. 1 (24S)

Emissions from the 157.5 hp diesel fired emergency generator were based on AP-42 Table 3.3-1 ($SO_2$ and VOCs), manufacturer information ($PM/PM_{2.5}$, CO and $NO_x$ ) and Table 3.3-2 (HAPs). It should be noted that the emission factor used for $NO_x$ is actually $NO_x$ + NMHC. Therefore, it should be very conservative. Similarly, the VOC emission factor is actually for TOCs and should, therefore, also be conservative. All annual emissions are based on 500 hours per year of operating time.

| CO | | $NO_x$ | | $PM/PM_{2.5}$ | | $SO_2$ | | VOCs | | HAPs | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| 0.16 | 0.04 | 1.40 | 0.35 | 0.08 | 0.02 | 0.31 | 0.08 | 0.39 | 0.10 | 0.01 | 0.01 |

Flame Laminator (25S)

Emissions from the operation of the flame laminator (except for $SO_2$) comes from a stack test performed on a similar operation in March of 1995 in New Mexico. That facility used both TDI and

MDI. Since Rubberlite will not use TDI, they added the TDI and MDI emissions from the New Mexico facility together for total emissions of MDI from the Huntington facility. Additionally, the New Mexico stack test showed emissions of HCl. This was due to the lamination of foams containing chlorinated fire retardants. Since the fire retardant used by Rubberlite is not chlorinated, no HCl emissions are anticipated from this source. $SO_2$ emissions are based on AP-42.

| CO | | $NO_x$ | | $PM/PM_{2.5}$ | | $SO_2$ | | VOCs | | HAPs | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| 1.52 | 6.65 | 0.51 | 2.22 | 0.58 | 2.55 | -- | -- | 2.02 | 8.87 | 0.42 | 1.80 |

In addition to the emissions from the flame laminator described above, there will also be emissions from the flame laminator due to the combustion of natural gas. Emissions due to the combustion of natural gas by the flame laminator were based on AP-42 chapter 1.4.

| CO | | $NO_x$ | | $PM/PM_{2.5}$ | | $SO_2$ | | VOCs | | HAPs | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| 0.04 | 0.17 | 0.04 | 0.20 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 |

Based on the above methodologies, criteria emissions from the modified facility will be as follows:

| CO | | $NO_x$ | | PM | | $PM_{10}$ | | $PM_{2.5}$ | | $SO_2$ | | VOCs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| 3.96 | 16.58 | 4.59 | 14.37 | 3.62 | 5.51 | 1.42 | 3.86 | 1.02 | 3.56 | 0.36 | 0.17 | 219.71 | 95.34 |

Based on the above methodologies, HAP emissions from the modified facility will be as follows:

| HAP | lb/hr | tpy |
|---|---|---|
| Lead | 0.01 | 0.01 |
| Acrylonitrile | 1.00 | 0.25 |
| Formaldehyde | 1.63 | 0.50 |
| Vinylidene Chloride | 1.00 | 1.00 |
| Vinyl Chloride | 1.00 | 0.50 |
| Benzene | 1.00 | 0.50 |
| Ethylene Oxide | 1.00 | 0.25 |
| Propylene Oxide | 1.00 | 2.50 |
| Ethyl Acrylate | 75.00 | 9.99 |
| Antimony Compounds | 75.00 | 9.99 |

| | | |
|---|---|---|
| Arsenic Compounds | 75.00 | 9.99 |
| Triethylamine | 75.00 | 9.99 |
| Styrene | 75.00 | 9.99 |
| MDI | 78.84 | 9.99 |
| Toluene | 77.77 | 9.99 |
| Glycol Ethers | 75.03 | 9.99 |
| Ethylene Glycol | 75.00 | 9.99 |
| 1,4 Dioxane | 75.00 | 9.99 |
| Acetaldehyde | 75.00 | 9.99 |
| HCN | 0.33 | 1.45 |
| **Total HAPs** | **87.67[1]** | **24.99** |

[1]Total hourly HAP emissions are not the sum of the emissions of each individual HAP. This is because the speciated HAP emissions are based on a worst case scenario of a maximum usage for a material containing the maximum content of that individual HAP. Obviously all of these scenarios cannot occur at the same time. Therefore, total HAPs were calculated by adding the maximum roll coater HAP emissions of 75 pounds per hour with the rest of the facility wide HAP emissions.

Based on the tables above, the increase in PTE due to this modification will be as follows:

| **Regulated Pollutant** | **lb/hr** | **tpy** |
|---|---|---|
| $PM_{2.5}$ | 0.95 | 3.33 |
| $PM_{10}$ | 1.35 | 3.63 |
| PM | 3.55 | 5.28 |
| CO | 3.40 | 14.15 |
| $NO_X$ | 3.93 | 11.47 |
| $SO_2$ | 0.35 | 0.15 |
| VOC | 209.94 | 71.18 |
| Total HAP | 84.98 | 20.24 |

REGULATORY APPLICABILITY

The facility is subject to the following state and federal rules:

STATE RULES

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

The Roll Coaters with dryers are subject to 45CSR2 because they meets the definition of fuel burning units. They are subject to the 10% opacity requirements in Section 3. They are 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 Coaters with dryers are subject to 45CSR10 because they meet the definition of fuel burning units. They are exempt from sections 3 and sections 6 through 8 because the heat input is less than 10 MMBtu/hr and meet 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 proposed modification of the Huntington facility has a potential to emit in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant and, therefore, pursuant to §45-13-2.24, the modification is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Rubberlite is required to obtain a permit under 45CSR13 for the modification and operation of the facility.

As required under §45-13-8.3 ("Notice Level A"), Rubberlite placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on September 22, 2015 in *The Herald Dispatch* and the affidavit of publication for this legal advertisement was submitted on November 3, 2015.

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 continue to be below this applicability threshold defined in §45-21-40.1.a.

Rubberlite continues to be 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.

Section 13 applies to any paper coating operation. The roll coating operations are not dedicated to paper coating operations. The applicant is subject to Section 13 for the paper coating operations [7S, 13S, 20S, 21S and 22S] when the roll coaters are used in paper coating operation service, based on the worst case assumption of potential to emit emissions provided in the application and assuming 100% fabric coating service of the roll coaters. Section 13 limits the VOC content of any coating to 0.35 kilograms per liter (kg/L) (2.9 pounds per gallon [lb/gal]), minus water and exempt compounds, as applied.

Section 14 applies to any fabric coating operation; The roll coating operations are not dedicated to fabric coating operations. The applicant is

subject to section 14 for the roll coating operations [7S, 13S, 20S, 21S and 22S] when the roll coaters are used in fabric coating operation service, based on the worst case assumption of potential to emit emissions provided in the application and assuming 100% fabric coating service of the roll coaters. Section 14 limits the VOC content of any coating to 0.35 kilograms per liter (kg/L) (2.9 pounds per gallon [lb/gal]), minus water and exempt compounds, as applied.

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

The purpose of 45CSR27 is to prevent and control the discharge of toxic air pollutants requiring the application of best available control technology.

Rubberlite is not subject to 45CSR27 because the permit will limit the potential emissions of TAPs from the Roll Coaters to less than the thresholds in Table A of 45SCR27.

45CSR30 REQUIREMENTS FOR OPERATING PERMITS

Facilities that are subject to 40 CFR 63, Subpart OOOOOO are exempt from the obligation to obtain a permit under 40 CFR part 70 or part 71, provided they are not otherwise required by law to obtain a Title V permit.

FEDERAL RULES

40 CFR 63, Subpart OOOOOO NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR FLEXIBLE POLYURETHANE FOAM PRODUCTION AND FABRICATION AREA SOURCES

You are subject to this subpart if you own or operate an area source of hazardous air pollutant (HAP) emissions that meets the criteria in (a)(1) or (a)(2) according to §63.11414. This subpart does not apply to R&D facilities, as defined in section 112 (c)(7) of the Clean Air Act.

(a)(1) You own or operate a plant that produces flexible polyurethane foam or rebond foam as defined in §63.1292 below:

Flexible polyurethane foam means a flexible cellular polymer containing urea and carbamate linkages in the chain backbone produced by reacting a diisocyanate, polyol, and water. Flexible polyurethane foams are open-celled, permit the passage of air through the foam, and possess the strength and flexibility to allow repeated distortion or compression under stress with essentially complete recovery upon removal of the stress.

Rebond foam means the foam resulting from a process of adhering small particles of foam (usually scrap or recycled foam) together to make a usable cushioning product. Various adhesives and bonding processes are used. A typical application for rebond foam is for carpet underlay.

(a)(2) You own or operate a flexible polyurethane foam fabrication facility as defined in §63.11419 below:

Flexible polyurethane foam fabrication facility means a facility where pieces of flexible polyurethane foam are cut, bonded, and/or laminated together or to other substrates.

The foam production process description taken from the application and states that Rubberlite uses diisocyanate and polyol and uses water as the blowing agent. Rubberlite therefore meets the applicability criterion (a)(1) for flexible polyurethane foam production.

The applicant is subject to the provisions of slabstock flexible polyurethane foam production affected sources which is the collection of all equipment and activities necessary to produce slabstock flexible polyurethane foam (§ 63.11414(b)(1)). The foam production unit [1S], the ISO tanks [10S], and the Glycol tanks [11S] are "existing" affected sources because construction commenced on or before April 4, 2007. Foam production unit (15S) would be a new existing source.

The fabrication processes at Rubberlite include both the foam that is produced at the site and the foam that is purchased from others. Fabrication processes include: Bun Presses (joining the buns together to make longer buns or master rolls by applying adhesive to each end of the buns) and then pressing together to form a bond; Hot Melt Laminators (involve the lamination of fabric to foam); Buffer (finished to a tight tolerance for the desired thickness); Misting Unit (applies material to foam that allows a crust or skin to be developed on the foam and then cured); and Roll Coaters (producing a foam material with a crust or skin). Rubberlite meets the applicability criterion (a)(2) for the flexible polyurethane foam fabrication.

The applicant is subject to the provisions for flexible polyurethane foam production affected source which is the collection of all equipment and activities at a flexible polyurethane foam fabrication facility where adhesives are used to bond foam to foam or other substrates. Equipment and activities at flexible foam fabrication facilities which do not use adhesives to bond foam to foam or other substrates are not flexible polyurethane affected sources.

The Bun Press [2S] is defined as "existing" because construction commenced on or before April 4, 2007. Bun Press [18S], The Hot Melt Laminators [3S], [4S] and [19S], the Roll Coaters [7S], [13S], [20S], [21S] and [22S] are defined as "new" fabrication affected sources because construction commenced after April 4, 2007.

Emission units 1S, 10S, 11S and 13S are subject to the standards provided in § 63.11416(b), the compliance requirements in § 63.11417(b) and the General Provisions of subpart A as specified in Table 1 of subpart OOOOOO.

Emission units 2S, 3S, 4S, 7S, 13S, 19S, 20S, 21S and 22S are subject to the standards provided in § 63.11416(e). There were four

loop splitters identified as miscellaneous fabrication equipment in the application and evaluation of permit R13-2948. The loop slitters, are subject to the compliance requirements in § 63.11417 (c) and (d).

40 CFR 60, Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII of 40 CFR 60 is the NSPS for stationary compression ignition internal combustion engines (diesel fired engines). Section §60.4200 states that "provisions of [Subpart IIII] are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE)." Specifically, §60.4200(a)(2) states that Subpart IIII applies to "[o]wners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines...

Rubberlite has indicated in it's permit application that the emergency generator was manufactured on October 21, 2006. Therefore it is subject to Subpart IIII. Based on the standards for owner/operators of emergency generator CI ICE under §60.4205, the following table details the emission standards for the engine:

| Duty | Size (hp) | Displacement (L/cyl) | Emission Standards (g/kw-hr) |
|---|---|---|---|
| | | | $NO_x$ |
| Emergency | 157.5 | <10 | 9.2 |

Compliance with these standards are met primarily by, pursuant to §60.4211(b)(1), "purchasing an engine certified to the emission standards." Rubberlite has indicated in their permit application that the engine is a certified Subpart IIII engine.

40 CFR 63, Subpart ZZZZ: National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The facility is an area source of HAPs and, therefore, the emergency generator is subject to the area source provisions of Subpart ZZZZ. However, it is a new (built after June 12, 2006), emergency engine rated at less than 500 hp and located at an area source of HAPs, the only requirements are to comply with 40CFR60 Subpart IIII.

## 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 at a rate of at least 0.01 pounds per hour.

The following information comes directly from engineering evaluations R13-2948 and R13-2948A:

**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.

**Acrylonitrile:**

Exposure to acrylonitrile is primarily occupational: it is used in the manufacture of acrylic acid and modacrylic fibers. Acute (short-term) exposure of workers to acrylonitrile has been observed to cause mucous membrane irritation, headaches, dizziness, and nausea. No information is available on the reproductive or developmental effects of acrylonitrile in humans. Based on limited evidence in humans and evidence in rats, EPA has classified acrylonitrile as a probable human carcinogen (Group B1).

**Antimony Compounds:**

Everyone is exposed to low levels of antimony in the environment. Acute (short-term) exposure to antimony by inhalation in humans results in effects on the skin and eyes. Respiratory effects, such as inflammation of the lungs, chronic bronchitis, and chronic emphysema, are the primary effects noted from chronic (long-term) exposure to antimony in humans via inhalation. Human studies are inconclusive regarding antimony exposure and cancer, while animal studies have reported lung tumors in rats exposed to antimony trioxide via inhalation. EPA has not classified antimony for carcinogenicity. Antimony is alloyed with other metals such as lead to increase its hardness and strength; its primary use is in antimonial lead, which is used in grid metal for lead acid storage batteries.

**Arsenic Compounds:**

Arsenic, a naturally occurring element, is found throughout the environment; for most people, food is the major source of exposure. Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic of humans is associated with irritation of the skin and mucous membranes and effects in the brain and nervous system. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver or kidney damage in humans. Inorganic arsenic exposure of humans, by the inhalation route, has been shown to be strongly associated with lung cancer, while ingestion of inorganic arsenic by humans has been linked to a

form of skin cancer and also to bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a human carcinogen.

Arsine is a gas consisting of arsenic and hydrogen. It is extremely toxic to humans, with headaches, vomiting, and abdominal pains occurring within a few hours of exposure. EPA has not classified arsine for carcinogenicity.

**Chromium Compounds:**

Chromium occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Exposure may occur from natural or industrial sources of chromium. Chromium III is much less toxic than chromium (VI). The respiratory tract is also the major target organ for chromium (III) toxicity, similar to chromium (VI). Chromium (III) is an essential element in humans. The body can detoxify some amount of chromium (VI) to chromium (III).

The respiratory tract is the major target organ for chromium (VI) toxicity, for acute (short-term) and chronic (long-term) inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to chromium (VI), while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled chromium (VI) is a human carcinogen, resulting in an increased risk of lung cancer. Animal studies have shown chromium (VI) to cause lung tumors via inhalation exposure.

The metal chromium is used mainly for making steel and other alloys. Chromium compounds, in either the chromium (III) or chromium (VI) forms, are used for chrome plating, the manufacture of dyes and pigments, leather and wood preservation, and treatment of cooling tower water. Smaller amounts are used in drilling muds, textiles, and toner for copying machines.

**Ethyl Acrylate:**

Exposure to ethyl acrylate is primarily occupational. Acute (short-term) exposure of workers to ethyl acrylate vapors has been reported to cause drowsiness, lethargy, headache, nausea, convulsions, and respiratory and gastrointestinal irritation. Noncancerous lesions and inflammation of the nasal mucosa and depressed body weight gain have been observed in rats and mice exposed by inhalation for a chronic (long-term) duration. Human studies on occupational exposure to ethyl acrylate/methyl methacrylate have suggested a relationship between exposure to the chemical(s) and colorectal cancer, but the evidence is conflicting and inconclusive. In a study by the National Toxicology Program (NTP), increased incidences of squamous cell papillomas and carcinomas of the forestomach were observed in rats and mice exposed via gavage (experimentally placing the chemical in the stomach). However, the NTP recently determined that these data were not relevant to human carcinogenicity and removed ethyl acrylate from its list of carcinogens. EPA has classified ethyl acrylate as a Group B2, probable human carcinogen, but has not developed a potency estimate to quantify risk by inhalation.

**Ethyleneimine (Aziridine):**

Ethyleneimine has many uses, including in polymerization products and in adhesives and binders. Acute (short-term) inhalation exposure to ethyleneimine causes severe respiratory tract irritation and inflammation in humans, but symptoms may be delayed for several hours. Some symptoms of acute inhalation exposure in humans include tearing and burning of the eyes, sore throat, nasal secretion, bronchitis, shortness of breath, and edema of the lungs. Ethyleneimine is a severe blistering agent, causing third degree chemical burns of the skin. It is also corrosive to eye tissue and may cause permanent corneal opacity and conjunctival scarring. At low levels, chronic (long-term) inhalation exposure has been reported to result in effects on the blood in humans. EPA has not classified ethyleneimine for carcinogenicity.

**Vinyl Chloride**

Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Acute (short-term) exposure to high levels of vinyl chloride in air has resulted in central nervous system effects (CNS), such as dizziness, drowsiness, and headaches in humans. Chronic (long-term) exposure to vinyl chloride through inhalation and oral exposure in humans has resulted in liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation, as vinyl chloride exposure has been shown to increase the risk of a rare form of liver cancer in humans. EPA has classified vinyl chloride as a Group A, human carcinogen.

The following information comes directly from EPAs Health Effect Notebook which can be found at http://www.epa.gov/ttn/atw/hlthef/hapindex.html :

**Styrene:**

Styrene is primarily used in the production of polystyrene plastics and resins. Acute (short-term) exposure to styrene in humans results in mucous membrane and eye irritation, and gastrointestinal effects. Chronic (long-term) exposure to styrene in humans results in effects on the central nervous system (CNS), such as headache, fatigue, weakness, and depression, CSN dysfunction, hearing loss, and peripheral neuropathy. Human studies are inconclusive on the reproductive and developmental effects of styrene; several studies did not report an increase in developmental effects in women who worked in the plastics industry, while an increased frequency of spontaneous abortions and decreased frequency of births were reported in another study. Several epidemiologic studies suggest there may be an association between styrene exposure and an increased risk of leukemia and lymphoma. However, the evidence is inconclusive due to confounding factors. EPA has not given a formal carcinogen classification to styrene.

**Vinylidene Chloride**

Vinylidene chloride is used as an intermediate in chemical synthesis and to produce polyvinylidene chloride copolymers. The primary acute (short-term) effects in humans from vinylidene chloride exposure are on the central nervous system (CNS), including CNS depression and symptoms of inebriation, convulsions, spasms, and unconsciousness at high concentrations. Low-level, chronic (long-term) inhalation exposure of vinylidene chloride in humans may effect the liver. Animal studies indicate that chronic exposure to vinylidene chloride can affect the liver, kidneys, CNS and lungs. Human data are considered inadequate in providing evidence of cancer from exposure to vinylidene chloride.

**Benzene**

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as known human carcinogen for all routes of exposure.

**Ethylene Oxide**

The major use for ethylene oxide is as a chemical intermediate in industry. The acute (short-term) effects of ethylene oxide in humans consist mainly of central nervous system (CNS) depression and irritation of the eyes and mucous membranes. Chronic (long-term) exposure to ethylene oxide in humans can cause irritation of the eyes, skin, and mucous membranes, and problems in the functioning of the brain and nerves. Some human cancer data show an increase in

the incidence of leukemia, stomach cancer, cancer of the pancreas, and Hodgkin's disease in workers exposed to ethylene oxide. However these data are considered to be limited and inconclusive due to uncertainties in the studies. EPA has classified ethylene oxide as a Group B1, probable human carcinogen.

**Propylene Oxide**

Propylene oxide is used in the production of polyethers (the primary component of polyurethane foams) and propylene glycol. Acute (short-term) exposure of humans and animals to propylene oxide has caused eye and respiratory tract irritation. Dermal contact, even with dilute solutions, has caused skin irritation and necrosis in humans. Propylene oxide is also a mild central nervous system (CNS) depressant in humans. Inflammatory lesions of the nasal cavity, trachea, and lungs and neurological effects have been observed in animals chronically (long-term) exposed to propylene oxide by inhalation. Propylene oxide has been observed to cause tumors at or near the site of administration in rodents, causing forestomach tumors following ingestion via gavage (experimentally placing the chemical in the stomach) and nasal tumors after inhalation exposure. EPA has classified propylene oxide as a Group B2, probable human carcinogen.

**Triethylamine**

Acute (short-term) exposure of humans to triethylamine vapor causes eye irritation, corneal swelling, and halo vision. People have complained of seeing "blue haze" or having "smoky vision." These effects have been reversible upon cessation of exposure. Acute exposure can irritate the skin and mucous membranes in humans. Chronic (long-term) exposure of workers to triethylamine vapor has been observed to cause reversible corneal edema. Chronic inhalation exposure has resulted in respiratory and hematological effects and eye lesions in rats and rabbits. No information is available on the reproductive, developmental, or carcinogenic effects of triethylamine in humans. EPA has not classified triethylamine with respect to potential carcinogenicity.

**1,4 Dioxane**

1,4-Dioxane is used as a solvent. Acute (short-term) inhalation exposure to high levels of 1,4-dioxane has caused vertigo, drowsiness, headache, anorexia and irritation of the eyes, nose, throat, and lungs in humans. It may also irritate the skin. Damage to the liver and kidneys has been observed in rats chronically (long-term) exposed in their drinking water. In three epidemiologic studies on workers exposed to 1,4-dioxane, the observed number of cancer cases did not differ from the expected cancer deaths. Tumors have been observed in orally exposed animals. EPA has classified 1,4-dioxane as a Group B2, probable human carcinogen.

**Acetaldehyde**

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

**Hydrogen Cyanide**

Cyanide is used in a number of industries and is found at low levels in air from car exhaust. Cyanide is extremely toxic to humans. Chronic (long-term) inhalation exposure of humans to cyanide results primarily in effects on the central nervous system (CNS). Other effects in humans include cardiovascular and respiratory effects, an enlarged thyroid gland, and irritation to the eyes and skin. No data are available on the carcinogenic effects of cyanide in humans via inhalation. Animal studies have suggested that oral exposure to cassava (a cyanide-containing vegetable) may be associated with malformations in the fetus and low fetal body weights. EPA has classified cyanide as a Group D, not classifiable as to human carcinogenicity.

## AIR QUALITY IMPACT ANALYSIS

Since this is a modification to an existing non major source (as defined in 45CSR14) no modeling was required.

## MONITORING OF OPERATIONS

Monitoring requirements for the new roll coaters, foam production line, bun press, hot melt laminator, and solvent cleaning station will be the same as is already required in the permit. Additionally, the permittee shall monitor and record the following:

* The amount of laminate ($ft^2$) applied to foam by the flame laminator.

* Number of hours of operation of the emergency generator.

## CHANGES TO PERMIT R13-2948A

The following changes will be made to R13-2948A:

* Table 1.0 was updated to include the new equipment.

* The new equipment was added to condition 4.1.2.

* New TAPs that will be emitted from the facility were added to condition 4.1.4

* Condition 4.1.5 was changed to apply to the new foam production line in addition to the old one. Additionally, the old production limit did not show compliance with the emission limit because the product type which resulted in maximum emissions was not the product which could be produced at the maximum rate. Therefore, the limit was changed to limit the production rate to the amount listed in new Attachment B of the permit.

* The glue usage in condition 4.1.6 was reduced from 2,000 gallons per year to 600 gallons per year (combined).

* Condition 4.1.7 was changed to add hot melt laminator 19E and remove the exemption for non MDI containing glue since emissions were calculated based on total glue usage.

* Condition 4.1.9 was changed significantly. The new roll coaters were added and conditions 4.1.9.1 and 4.1.9.2 were added in order to separate combustion emissions from coating emissions.

* Condition 4.1.10 was changed to add solvent cleaning station 23E. Additionally, condition 4.1.10.1 was added to limit HAP content in the washing fluid.

* New conditions 4.1.12 through 4.1.16 were added. All subsequent conditions in section 4.1 were renumbered.

* Old condition 4.1.12 (new condition 4.1.17) was changed to add the Apollo Dryers 20S, 21S and 22S.

* Condition 4.4.4 was changed to add roll coaters 20S, 21S and 22S.

* Condition 4.4.6 was changed to add foam production unit 9E and remove the non MDI containing glue exemption.

* Condition 4.4.7 was modified to change the reference to condition 4.1.9 to 4.1.9.1.

* New Condition 4.4.8 was added to require the permittee to keep records of the HAP content of all washing fluids used.

* Old conditions 4.4.8 and 4.4.9 were renumbered to 4.4.9 and 4.4.10.

* New conditions 4.4.11 was added. All subsequent conditions in section 4.4 were renumbered.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved.

Steven R. Pursley, PE
Engineer

5-5-16
May 5, 2016

# Summary of Requirements[1]

**40 CFR part 60, subpart IIII**

**Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

For pre-2007 model year **emergency** engines with displacement of less than 10 liters/cylinder, (except fire pump engines) constructed after July 11, 2005 and manufactured after April 1, 2006

**NOTE: To refer directly to the regulatory text, please go to Subpart IIII (scroll down to almost the end of the page).**

**Temporary Engines:**

Per 60.4200(e) Owners and operators of facilities with CI ICE that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

**Emission Standards:** 60.4205(a), Table 1

60.4205(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in Table 1 to this subpart. Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

Per 60.4215(a) Stationary CI ICE with a displacement of less than 30 liters per cylinder that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are required to meet the applicable emission standards in §§60.4202 and 60.4205. Stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are required to meet the emission standards in 60.4215(c).

Special requirements apply to engines used in Alaska. Please refer to 60.4216 for the specific requirements and provisions that apply to engines that are located in areas of Alaska not accessible by the FAHS.

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[1]Disclaimer: The content provided in this software tool is intended solely as assistance for potential reporters to aid in assessing requirements for compliance under the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII. Any variation between the rule and the information provided in this tool is unintentional, and, in the case of such variations, the requirements of the rule govern. Use this tool does not constitute an assessment by EPA of the applicability of the rule to any particular facility. In particular case, EPA will make its assessment by applying the law and regulations to the specific facts of

**Fuel Requirements:** 60.4207(a), (b), (e)

60.4207(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

Per 60.4215(b) Stationary CI ICE that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are not required to meet the fuel requirements in 40 CFR 60.4207.

Per 60.4217 Owners and operators of stationary CI ICE that do not use diesel fuel may petition the Administrator for approval of alternative emission standards, if they can demonstrate that they use a fuel that is not the fuel on which the manufacturer of the engine certified the engine and that the engine cannot meet the applicable standards required in §60.4204 or §60.4205 using such fuels and that use of such fuel is appropriate and reasonably necessary, considering cost, energy, technical feasibility, human health and environmental, and other factors, for the operation of the engine.

**Importing/Installing Requirements:** 60.4208(a), (b), (h), (i)

60.4208(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(h) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section.

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

**Monitoring Requirements:** 60.4209(a); if equipped with diesel particulate filter: 60.4209(b)

60.4209(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.