To: File
From: John Legg
Date: February 23, 2017

Subject: PD17-016 - "No Rule 13 Permit Needed" for Three (3) Phase Project Affecting the Texin Unit
Covestro, Proctor, Marshall County, WV
Company ID No.: 051-00009
Permit Determination No.: PD17-016

Covestro submitted a new, stand-alone permit determination to the WVDAQ on February 17, 2016. This PD follows the "no decision" determination rendered for their previous permit determination, PD16-070, in which the same writer asked the company to provide information on seven (7) different concerns/questions related to the company's proposed three (3) Phase Project affecting the Texin Unit.

After reading the company's responses, the writer is satisfied that a Rule 13 permit is not required for the proposed project because:

- The increase in emissions (see the sections below entitled Calculation of Phase 1, 2 & 3Emissions) are less than the limits listed in section 2.17 of 45CSR13:

  VOCs < 6 lb/hr, < 144 lb/day and < 10 TPY

  HAPs < 2 lb/hr and < 5 TPY

- There are no existing Rule 13 permit limits to be changed.

  (Note if there had been existing Rule 13 permit limits then a Class II Administrative Update would have had to be filed by Covestro.)

Suggested Changes in Title V Permit: Covestro is suggesting changing the emission factor listed in the Title V Permit R30-05100009-2013 Condition 8.4.5 to 0.029 lb HAPs/unit produced for Line #1 and modifying condition 8.1.8 to "... shall not exceed 0.24 tpy ....". These changes will not impact the facility-wide HAP requirement contained in Conditions 3.1.10 and 3.2.1 of the Title V permit since the site-wide HAP emissions are typically less than 5 TPY.

As was discussed in both of Covestro's permit determinations (PD16-070 and PD17-016), the emissions increase resulting from the proposed project does, however, necessitate changing certain non-facility-wide HAP requirements/limits that were placed in the Title V permit in order to make the facility a synthetic HAP minor. **It is therefore Covestro's responsibility to submit to the DAQ an application for a significant modification to the Title V permit to make the necessary changes resulting from the proposed project.**

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The same seven (7) concerns/questions posed in PD16-070 are listed below with Covestro's responses to those concerns:

1) Please update the process flow diagram in Attachment B to show any pollutant emission points. If emission point is permitted, its label should be the same as in the permit. If an emission point vents inside a building please label it as such.

Writer's Response to #1: Covestro provided an updated process flow diagram showing emission points and a Baghouse (022-1151). Most of the emission sources discharge into a building. The dryer (022-1137) emission point and baghouse (022-1151) emission point are both labeled VC01/PC01 and discharge outside.

2) List all existing control equipment (such as baghouses, filters, scrubbers, absorbers, etc.) and associated removal efficiencies for the equipment involved in Phases 1, 2 and 3 of your proposed project.

4) What are the current permitted pollutant (PM, VOC, HAP) limits for equipment to be updated by the proposed project? Will pollutant limits be exceeded because of increase resulting from the proposed project?

Writer's Response to #4: See Covestro's response to #6.

Covestro's Response to Comments #1, #2, and #4: The equipment numbers, process vent points and control equipment are now included on the Process Flow Diagram (Attachment B). A list of the vent points along with a discussion of the current permitted limits are also found in the General Process Overview. As in the original PD application, a proposed change in the permit limit found in Section 8 of the Title V permit was requested.

3) By what percentage will the final product increase by (on Line 1) as a result of using the larger extruder?

Covestro's Response to #3: This confidential information is included in Attachment E.

Covestro states in their "Calculations - Phase 2" section of their application that "Phase 2 of the project will replace the Line #1 extruder with a larger one. The organic emissions would increase proportionally."

Writer's Response to #3: The ratio of proposed VOC emissions to current VOC emissions is:

707.8 lb VOC/329.2 lbVOC

5) Are the other two (2) extruder lines going to be modified in the next five (5) years?

Covestro's Response to #5: There are no plans to increase capacity in the other extruders during the next five years. This is reflected in the current capital spending forecast.

6) Please explain in greater detail about the synthetic HAP minor mentioned in the permit determination.

Covestro's Response to #6: From 2001 through 2007 Covestro (at the time named Bayer MaterialScience) shut down more than 40% of their New Martinsville plant site. These shutdowns were permanent and the units were demolished. The units that were closed contributed more than 50% of the site-wide HAP emissions. The site examined the remaining sources and in 2009 requested from WVDEP the status of HAP synthetic minor source for the remaining site.

Since some of the units did not have "modern" Reg-13 permit with enforceable limits, the WVDAP agreed to use the Title V permit as an instrument to control HAP emissions below 9.4 TPY of any single HAP and 24.4 TPY of total HAPS. These total limits with appropriate monitoring equipment were included in the Title V permit (beginning with the one issued in May of 2008) as Conditions 3.1.10; 3.2.1; 3.4.4 and 3.5.10. This is discussed in the Title V Fact Sheet R30-05100009-2008.

In addition to the total HAP limitations described above, individual sections of the Title V permit list unit specific HAP emission limits and associated methods of calculations. For the Texin unit the specific conditions from the current Title V permit (R13-05100009-2013) are 8.1.8, 8.2.2; 8.4.4 and 8.4.5.

As described in PD16-070 application Covestro is requesting that line #1 emission factor be increased to 0.029 lb/unit (Condition 8.4.5) and the total limit to 0.24 tpy. These changes will not impact the facility-wide HAP requirement contained in Conditions 3.1.10 and 3.2.1 of the Title V permit since annual HAP emissions are typically less than 5 tons.

7) Please offer additional information/explanation related to the following statement in Attachment E, Calvculations - Phase 1:

> "Since the blower sizes will not increase it is anticipated that this project will not impact particulate emissions. The pellets are constantly recycled through out the system 24 hours per day. Hence, the emissions are dependent on the air handling equipment and not the amount of product flowing through the system. Since the air handling will not increase the emissions will remain unchanged."

Be sure to provide information on all control equipment involved with the air handling system. If the amount of product is increased and the same air handling system is used, would the concentration of PM within the system increase such that an inline dust collection system could collect more PM emissions that at the lower product production rate.

Covestro Response to #7: The product silos are equipped with blowers that utilize air to constantly recyle the Texin pellets in order to keep the product dry. Air is also used to convey the pellets from the extruders to the silos and then to the packaging lines.

While one would expect an increase in emissions if the product was a powder, but this is not the case. These pellets are rather large. Since they are cut underwater, no particulates are present when they enter the silo and the main source of PM is from abrasion of the pellets during the recycle operation. A picture of the Texin pellets show them to resemble an elliptical, clear bead, approximately 1/8" in length.

Since the air handling equipment is not changing in size, the amount of pellets that is able to be moved by the air stream is unaffected and the fines generated by any particulate abrasion is constant.

General Process Overview - TEXIN

Product Description

TEXIN® TPU (Texin) is a solid thermoplastic urethane (TPU) whose name comes from the process:

T- **Tr**ansfer molding
EX - **EX**trusion
IN - **IN**jection molding

Texin materials bridge the gap between rubber and plastics. These materials are available in grades that go from very soft and flexible to very rigid. Many grades comply with FDA food-contact regulations. Typical uses are automotive instrument panels, caster wheels, power tools, sporting goods, medical devices, and a variety of extruded film, sheet and profile applications.

Process Description

The New Martinsville site produces TEXIN via a continuous batch operation. Distinct and identifiable production lots are produced by three reactive extruder lines. The following process description, although typical for all three extruder lines, will focus primarily on products produced on Line 1, which is the focus of the current project.

The three primary raw materials for the production of Texin are an isocyanate (monomeric MDI), a resin (polyether) and the chain extender (1, 4-Butanediol). All three primary components, as well as additional small quantity additives, are ratio flow controlled using the Delta V distributed control system (DCS).

- MDI is supplied from a central storage tank and is either fed into the prepolymer line (equipped with mixing elements so it can combine with the resin) or be fed directly into the liquid feed nozzle.

- The chain extender, 1-4-Butanediol, is also fed into the extruder either directly to the liquid feed nozzle or through the prepolymer line depending on whether the TPU product is produced.

- Polyether resin (PTMEG 1000) is charged into a mix tank using weigh cells. Additives such as catalysts and UV stabilizers are manually added to the mix tank. The contents of the mix tank are agitated and transferred to the hold tank then the resin run tank. Subsequently the resin is charged to the extruder.

Once these three materials are combined in the front end of the extruder, the feeds react to form the TPU. The extruder contains zones or blocks that are temperature controlled. Based upon which TPU product is being produced, temperature profiles across the extruder are in the range of 220° - 500 °F (104° - 260°C).

The liquid TPU exits the extruder and flows through a die plate. As the liquid exits the die plate it is pelletized using a motor-driven set of blades cutting against the die plate face. Extruder Line 1 utilizes a Gala underwater pelletizing system where a continuous flow of water moves across the cutter blades and die plate face eliminating air emissions.

The pellets are then sent to the dryer. Depending on the specific product the pellets may be dusted with a small amount of wax as they pneumatically are conveyed to a storage silo. From the silo the pellets are pneumatically conveyed to the packaging area.

Process Equipment and Vent Points Affected by Proposed Project

Description	**Equipment #**	**Vent ID**	**Control Device**	**Permitted Limit**
Mix Tank	022-119	Vents into bldg	None	Combined Limit*
Hold Tank	022-1077	Vents into bldg	None	
Pelletizer	022-1136	Vents into bldg	None	

Description	Equipment #	Vent ID	Control Device	Permitted Limit
Dryer	022-1137 and 022- 1138	VC01/PC01	None	
Product Silos (4)	022-196-1; -2; 448; 449	Vents to Baghouse	Baghouse (022-1151)	
Screener and Packaging			Baghouse (022-1151)	
Baghouse	022-1151	VC01/PC01		PM - 0.32 lb/hr and 0.000432 tpy
*** Combined limit for all of Line #1 is shown in conditions 8.1.8 and 8.4.5 of the Title V permit R30-05100009-2013. Condition 8.4.5 states that the limit for Line#1 is 0.0135 lb HAP/unit-produced. This corresponds with the limit stated in Condition 8.1.8 that " .... the combined HAP emissions for Lines #1, 2 and 3 is 0.2 tpy ...."**				

Baghouse Description and Limits

The baghouse is a fabric filter with a control efficiency of 99.7%. There is no Reg-13 permits associated with the silo or the baghouse (Most recent agency correspondence is PD05-092, dated August 3, 2005.). The PTE for each silo is listed as 0.08 lb/hr and 0.35 TPY. Consequently the sum of the particulate matter from the four affected silos is 0.32 lb/hr and 1.44 TPY prior to the baghouse. After the control devie the emissions ar 0.001 lb/hrt and 0.00432 TPY.

Proposed Project

The planned project has three (3) phases:

Phase	Description	Proposed Start Date	Proposed Operation Date
#1	De-bottle-neck the packaging system.	May 2017	June 2017
#2	Replace the current Line #1 extruder with a larger extruder.	June 2017	October 2017

Phase	Description	Proposed Start Date	Proposed Operation Date
#3	Utilize a larger storage tank for resin; one that is capable of accepting loads from rail cars.	June 2017	August 2017

Calculation of Emissions - Phase 1

Phase 1 of the project consists of de-bottle-necking the storage and packaging section of the process. This will be done by optimizing the pellet transfer system and changing the configuration of the packaging system to reduce packaging time.

The project is a solid and hence, only particulate emissions are emitted from the storage and packaging sections. Since the blower sizes will not increase, it is anticipated that this project will not impact particulate emissions.

The product silos are equipped with blowers that utilize air to constantly recycle the Texin pellets in order to keep the product dry. Air is also used to convey the pellets from the extruders to the silos and then to the packaging lines.

If the product was a power there might be a potential to increase particulate emissions, however, the Texin products are plastic pellets which are relatively large in size. In addition these pellets are cut in an underwater bath so there are no shards of pellets that enter the air stream. The main source of PM is from abrasion of the pellets during the recycle operation. Since the air handling equipment is not changing in size and the volume of air is not increasing. Hence, the amount of pellets that is able to be physically moved by the air stream is unaffected and the fines generated by any particulate abrasion is constant.

Calculation of Emissions - Phase 2

In 2008 Covestro (formerly Bayer) submitted an application for a HAP Synthetic Minor that was subsequently approved by the WVDEP. In that submittal emissions from Line #1 were calculated and are summarized in the table below. These emissions comprise emissions from the Line#1 extruder plus the associated process equipment (run tanks, hold tanks, etc.). Since the associated equipment is shared among the 3 extruders, the emissions have been proportioned among the extruders based on production capacities to represent the total emissions from Line #1. Please Note: The emissions listed do no include emissions from storage tanks, which will be handled separately (See Calculation of Emissions - Phase 3).

Organic Emissions	Total HAPs		Total VOCs	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Proposed	0.02337	0.1023	0.0808	0.3539
Current	0.01087	0.0476	0.0376	0.1646
Delta	+0.01250	+0.0547	+0.0432	+0.1893

Calculation of Emissions - Phase 3

Currently the Resin is stored in a 20,000 gallon storage tank. In order to support the increased production capacity the storage will be shifted to an 80,000 gallon storage tank that is equipped for railcar deliveries. The calculations were performed using Tank 4.09d.

Organic Emissions	Total HAPs		Total VOCs	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Proposed	0	0	0.0046	0.02
Current	0	0	0.0035	0.0156
Delta	0	0	+0.0011	+0.0044

ATTACHMENT B – PROCESS FLOW DIAGRAM