

To: File  
From: John Legg  
Date: August 19, 2015

*John Legg*  
*8/19/15*

Subj: R13-2561K - Class II Administrative Update  
Bayer MaterialScience LLC (Bayer)  
South Charleston, Kanawha County, WV  
Permit R13-2561K; Plant ID No. 039-00102

### Summary

This update (R13-2561K) results in a potential to emit (PTE) increase of 0.32 ton/yr of volatile organic compounds (VOC). The VOC emitted is primarily the reactant isopropanol (rubbing alcohol) and results from the routine atmospheric venting of storage Tank 1461. The presence of isopropanol in Tank 1461 is from a change in tank service following the implementation of changes proposed in R13-2561K.

### Introduction

This Class II Administrative Update was received by the Division of Air Quality (DAQ) on June 25, 2015. The \$300.00 permitting fee was received on June 29, 2015 and the writer was assigned that same day. The newspaper advertisement ran in the *Charleston Gazette* on June 10, 2015.

All of the changes in this update are associated with the Polymer Polyols (PMPO) manufacturing units.

Bayer is proposing to make PMPO products using a liquid catalyst. Due to continued customer demand, Bayer also wants to retain the ability to make PMPO products the way they did before this update, i.e., using a solid catalyst.

The following list of proposed changes comprise R13-2561K:

- 1) Change in service of storage tanks.
- 2) Addition of new chemical.
- 3) Storage tank (T-663) venting changed to thermal oxidizer (Y-2124) from atmosphere.
- 4) Replacement of catalyst mix tank (C-2405).
- 5) Modification of wastewater stripper (C-2044) column design.
- 6) Removal of dust collector requirement [venturi scrubber (V-2493)] for PMPO catalyst addition.
- 7) Removal of emergency venting (HV-616-09) for a wastewater tank (T-616).

## Process Description

Bayer's South Charleston site manufactures:

- **Polyether Polyols** that use epoxides (Propylene Oxide and Ethylene Oxide) as the primary raw materials and
- **Polymer Polyols (PMPO)** that use the epoxide Polyether Polyols plus acrylonitrile and styrene to produce a filled Polyether Polyol.

## Solid Catalyst

Charging/dumping/handling the solid catalyst can produce small amounts of dust/particulate matter. See Table 2, footnote \*\* below for additional information on solid catalyst dust emissions.

Before R13-2561K:

- The solid catalyst was stored/used in the PMPO manufacturing unit #4 (PP4) in the catalyst mix/storage tank ©-2405).
- Dust emissions were controlled by venting the catalyst mix/storage tank (C-2405) to the venturi scrubber (V2403).
- Undesirable by-product - Using the solid catalyst to make PMPO products produces an undesirable solid by-product (deemed confidential before this review).

The by-product increases the VOC content of the product.

Some studies indicate that the by-product has some harmful effects to the environment.

The undesirable by-product ultimately accumulates in the steam jet ejector system and condenser. To minimize the buildup, water flows are added to purge the steam jet ejector system (of the undesirable by-product) thus increasing the generation of wastewater which flows to wastewater stripper column (C-2044).

After R13-2561K:

- The catalyst addition tank (C-2405) will be:
  - reconstructed using stainless steel so as not to react with the new liquid catalyst.
  - relocated from PP4 to the PMPO Feed System and will feed the new liquid catalyst to PMPO units PP2, PP3, and PP4.
- Ventura Scrubber (V-2403) - The new liquid catalyst does not produce dust so the new catalyst mix & feed tank (C-2405) can be vented to the atmosphere instead of the ventura scrubber (V-2403), i.e., the ventura scrubber is no longer needed and will be removed from service.

- For customers who want PMPO Products made from using the solid catalyst: the PMPO products will be made in PMPO manufacturing unit #1 (PP1) in the catalyst addition tank (T-2305).

- The catalyst addition tank (T-2305) will be relocated from the PMPO Feed System to PP1. The tank will be vented to the atmosphere instead of the ventura scrubber. See Table 2, footnote \*\* below for additional information solid catalyst dust emissions.
- Wastewater Stripper Column (C-2044) - Because the production of the undesirable by-product from using solid catalyst will be reduced, the water flow rates required to purge the steam jet ejector system of undesirable by-product will be reduced, thus lowering the wastewater generated. The current wastewater stripper (C-2044) was sized to process the greater water flows needed when all PMPO Products were generated using the solid catalyst. The wastewater stripper column will be re-sized to handle the lower wastewater loads made possible from use of the new liquid catalyst.

C-2044 will be reduced in size and redesigned to be more efficient. The column will have the HAP wastewater reduction requirements of 40 CFR 63.138 (50 ppm total HAP's in the discharge or 99% reduction from inlet to outlet).

After process startup with the new liquid catalyst in use, a wastewater stripper performance test will be conducted and the results submitted to DAQ. If any of the current compliance parameters (section 6.1.12) need to be modified, Bayer will submit a permit modification to address the changes.

The writer asks Bayer's Jim White the following question in an email dated July 23, 2015:

No notes in emission units table about changes to be made to C2044, wastewater stripper?

Jim White replied back in an email dated July 27, 2015:

As far as the table on page 8 of the current permit goes nothing changed. We are modifying the diameter of the column and the internals - going from all plates to half plates and half packing. Since the hydraulic flow to the column is being changed dramatically the larger diameter column is not needed. On page 7 of application we state we plan to conduct a performance test for modified wastewater stripper column. Some of the wastewater stripper column requirements in 6.1.12 (a, c and d) may need to be changed. Requirements b and e are not expected to be affected by changes.

#### Liquid Catalyst

Bayer submitted the required paperwork in permit application R13-2561K to allow the DAQ to safeguard the identity/confidentiality of the new catalyst. A Material Safety Data Sheet (MSDS) for the catalyst was submitted within the application.

- The proposed catalyst is a liquid at ambient temperature. The liquid catalyst is a VOC and not a HAP or TAP. It does not create dust/need dust control.
- The use of the liquid catalyst will require that a raw material used in the reaction to be modified/changed, i.e., the propylene oxide and ethylene oxide ratios in one Polyether Polyol will be changed.
- The liquid catalyst will be fed to the PP2, PP3, and PP4 units from the new Catalyst Addition Tank (C-2405) located in the PMPO - Feed System.

#### PMPO Product made using Liquid Catalyst

- Product yields for PMPO manufactured with the liquid catalyst are expected to be less than for similar PMPO products manufactured with the solid catalyst.
- PMPO products manufactured using the liquid catalyst do not produce the undesirable by-product which results from using the solid catalyst. However, the use

of the liquid catalyst generates two other chemicals by-products. These two by-products will be:

- 1) discharged with the site wastewater to the South Charleston POTW or
- 2) shipped off site with the hazardous waste.

On August 14, 2015 the writer via email asked Bayer's Jim White the following questions. Jim White responded back that same day.

Q1. Are the two by-products made from using the liquid catalyst solid or liquid?

A1. Liquid. By-products will go to the waste treatment plant (WTP) and tanks from which we (Bayer) recycle or ship off site for fuel blending (incineration at cement kiln). Not quite 50/50 split to WTP or recycle/waste tanks, but in that order. We (Bayer) already ship the waste stream to the cement kiln for fuel blending. Waste/recycle tanks are required by permit to vent to thermal oxidizer. Concentrations are in low ppm level to WTP.

Q2. Are the by-products new to the process or the facility?

A2. Main by-products are pivalic acid, t-amyl alcohol, acetone and various other organics in low concentrations. The primary by-products pivalic acid and t-amyl alcohol are new to the site. Acetone is not new to the site, but new to manufacturing.

According to Wiki:

Pivalic Acid - CAS No. 75-08-9. A carboxylic acid with a molecular formula of  $(\text{CH}_3)_3\text{CCO}_2\text{H}$ . This colorless, odiferous organic compound is solid at room temperature. Like most carboxylic acids pivalic acid is a mild irritant and only weakly toxic.

t-amyl alcohol - CAS No. 75-85-4. A branched pentanol used primarily as a pharmaceutical or pigment solvent. It remains liquid at room temperature making it a useful alternative to tert-butyl alcohol. It is a colorless liquid with a pungent odor of camphor which is miscible with both water and organic solvents.

Acetone - CAS No. 67-64-1. The organic compound with the formula  $(\text{CH}_3)_2\text{CO}$ . It is a colorless, volatile, flammable liquid, and is the simplest ketone. Acetone is miscible with water and serves as an important solvent in its own right, typically for cleaning purposes in the laboratory.

Proposed Process Changes

The following table summaries changes to the PMPO units proposed in R13-2561K:

<b>Table 1: Changes in going from R13-2561J to R13-2561K.</b>			
<b>PMPO Units</b>	<b>Permit R13-2561K</b>		<b>Comment</b>
	<b>Before</b>	<b>After</b>	
PMPO Unit #1 (PP1)	---	** T-2305	Added; (solid) catalyst mix tank
PMPO Unit #2 (PP2)	* T-1461	---	Moved; cat/flex storage
	* T-1462	---	Moved; cat/flex storage
PMPO Unit #3 (PP3)	* T-1467	---	Moved; cat/flex storage
	* T-1468		Moved; cat/flex storage
PMPO Unit #4 (PP4)	old C-2405	---	Re-build & Moved; Cat mix tank Catalyst Storage; once vented to venturi scrubber scrapped/replaced by new C-2405
	V-2493	---	Retired; venturi scrubber - not used
	T-103	T-103	Stayed; tank names changed from: Cat/Flex Polymer Storage to: Storage
	T-104	T-104	
Preformed Stabilizer (PFS)	---	T-1461	Added: #2 ISOP/Polyol storage
	T-2502	T-2502	Correction. Tank name corrected to: #1 ISOP/Catalyst Preblend Tank
PFS Storage	---	T-663	Added; changed to PFS storage; vent changed to thermal oxidizer (from atm)
PMPO Feed System	* T-2305	---	Moved; (solid) catalyst mix tank once Fed PP1, PP2 & PP3
	* T-663	---	Moved; Storage Tank; vented to atm
	---	new C-2405	Re-build & Added; new Cat mix & feed tank; feeds liquid catalyst to PP2, PP3, and PP4

**Table 1: Changes in going from R13-2561J to R13-2561K.**

PMPO Units	Permit R13-2561K		Comment
	Before	After	
PMPO Support System	C-2044	C-2044	Stayed: Decreasing diameter of wastewater stripper because of decrease in hydraulic flow resulting from using liquid catalyst instead of solid catalyst; "MON" NESHAP Waste Water HAP Stripper w/ E-2045 Condenser and E-2057 Feed Preheater
	---	T-1462	Added; Stabilizer Storage
	---	T-1467	Added; Polyol Storage
	---	T-1468	Added; Storage
	T-8461	T-8461	Stayed; once stored Polyol (E-917); now storing Polyol @-3689)

\* Moved to another unit.

\*\* The writer asked Bayer's Jim White the follow question via email on August 5, 2015:

How can Bayer make polymer polyol in unit PP1 (for customers that want the polyol made using solid catalyst) when the ventura scrubber has been removed and T-2305 is vented to the atmosphere?

Jim White answered the above question via email on August 5, 2015:

Particulate emissions from the dumping of the solid catalyst to the mix pots are very small. We purchase a granular type of catalyst because powder tends to plug up the charge funnel and the operator has to rod it out. The PP1 catalyst mix tank (T-2305) was not required to have dust control in the original permit which was issued to Union Carbide in 1984. Union Carbide built the Polymer #4 unit about 1988 and included dust collection for the catalyst mix tank in the permit application. I really don't know why Union Carbide included dust collection based upon the amount of particulates generated unless their engineering estimates for particulate emissions were in error. ARCO Chemical purchased the Polyol business from Union Carbide in 1989 and we inherited the dust control requirement as part of the Polymer #4 permit.

**Table 1: Changes in going from R13-2561J to R13-2561K.**

PMPO Units	Permit R13-2561K		Comment
	Before	After	
<p>** Continued from above:</p> <p>We add several hundred pounds of catalyst per charge (1 – 2 charges per day for each of the catalyst mix tanks) and I doubt we get more than a thimble full of particulate dust. Since we will only be using the solid catalyst on Polymer #1, we will likely only have an addition to the Polymer #1 catalyst mix tank 1 – 2 times a week. The majority of catalyst we see that doesn't make it into the mix tank is spilled out of the charge funnel. Catalyst is added from about 30 gal fiber paks. We were required to test inlet particulate emissions to the scrubber in 2003 and the average inlet particulate amount to the scrubber was 4.42 E-04 lb/hr. Total charge time is 5 – 10 minutes</p> <p>We would not trigger any emission trigger. If I was going to guess, I would conservatively estimate we would emit less than 10 lbs of particulate a year from the PPI catalyst addition. Our total amount of particulate emissions at the site are small. Large majority of our raw materials and products are liquids and our thermal oxidizer operates on natural gas. DOW supplies steam to us so we do not have boilers. Only regulation that might come into play is 45 CSR 7. I would hope we would not have to spend a significant amount of money to reduce particulate emissions of 10 lbs per year for Reg 7.</p>			

Changes in Tank Services

Due to the addition of more PMPO products, additional tank flexibility is needed. The service for the following tanks will be modified.

**Table 2: Changes in Materials Stored in Tanks.**

Tank Number	Emission Unit Description			
	Old		New	
	T-663	PMPO Feed System	VOC Storage	PFS Storage
T-1461	PP2	Catalyst/Flex Polyol Storage (polyol/catalyst feed tank)	PFS	Preformed Stabilizer (PFS) Preblend 2 Isopropanol/Polyol Storage Tank (polyol / isopropanol)

<b>Table 2: Changes in Materials Stored in Tanks.</b>				
<b>Tank Number</b>	<b>Emission Unit Description</b>			
	<b>Old</b>		<b>New</b>	
T-1462	PP2	Catalyst/Flex Polyol Storage (polyol/catalyst feed tank)	PMPO Support System	Flex Polyol Storage Tank (polyol stabilizer)
T-1467	PP3	Catalyst/Flex Polyol Storage (polyol/catalyst feed tank)		Flex Polyol Storage Tank (Polyol R-3688)
T-1468	PP3	Catalyst/Flex Polyol Storage (polyol/catalyst feed tank)		Flex Polyol Storage Tank (Polyol R-3688)
T-8461	PMPO Support System	Flex Polyol Storage (Polyol E-917)		Flex Polyol Storage Tank (Polyol R-3689 Modified recipe)
C-2405	PP4	(Solid) Cat mix tank	PMPO Feed System	Tank Re-build. (Liquid) Cat Mix & feed tank (polyol, mineral spirits, and new catalyst)

T-663 Service & Venting Change

Before R13-2561H: T-663 was in TAP service [vinylidene chloride (VDC)] and was vented to the thermal oxidizer (Y-2124).

The amount of VDC vented from the tank and PMPO process potentially could be as high as 50 lb/hr.

R13-2561H: The service changed (March 5, 2012) and T-663 vented directly to the atmosphere.

R13-2561K: With the proposed process changes, T-663 will contain TAP/HAPs (acrylonitrile and styrene) and the tank will (once again) be vented to the thermal oxidizer.

The amount of VOC's vented from T-663 to the thermal oxidizer will be less than 1 lb/hr so there is no impact/change in the thermal oxidizer destruction efficiency.

### Tanks Vented to Atmosphere

Six (6) of the seven (7) storage tanks listed above in Table 2 (T-1461; T-1462; T-1467; T-1468; T-8461; C-2405) are vented to the atmosphere.

For C-2405: Polyols, mineral spirits and the new liquid catalyst have very low vapor pressures.

For T-1461: isopropanol emissions do not exceed the 6 lb/hr and 10 ton/yr Rule 13 modification VOC trigger.

For T-663: As discussed above, tank will be vent to the thermal oxidizer (Y-2124).

### T-8461 Service Change

Per a July 22, 2015 email from Jim White to writer:

- T-8461 pre-R13-2561K once stored Polyol E-917.
- Under R13-2561K now stores slightly different polyol: R-3689:

R-3689 is in the same family of polyols as E-917. Both polyols (R-3689 and E-917) have the same ingredients, but the recipe is changed/slightly different.

E-917 and R-3689 use different polyether polyols as raw materials. The difference in the polyether polyol is the amount of ethylene oxide and propylene oxide.

### C-2405 - Catalyst Change and Tank Replacement

As discussed above, Bayer is proposing to replace the Polymer Polyols' (PMPO) solid catalyst with a liquid catalyst. The liquid catalyst will have a low vapor pressure (<0.75 mm Hg) and will not require dust collection, i.e., the current control device, Venturi Scrubber (V-2493), will be shutdown/no longer operated.

Because the liquid catalyst is not compatible with the catalyst storage/mix tank (C-2405), the tank will be replaced with another vessel of the same size (1,100 gallon capacity) and similar configuration. The old catalyst storage/mix tank located in PP4 will be replaced with a new stainless steel catalyst mix and feed tank which will feed liquid catalyst and diluent (mineral spirits) continuously from the PMPO

Feed System to PMPO units #2, #3 and #4 when these units are in operation. VOC emissions from the new catalyst mix tank will be very low.

### MSDS

The following Material Safety Data Sheets were submitted in the R13-2561K application:

Acrylonitrile	CAS No. 107-13-1. VOC and WV Rule 27 Toxic Air Pollutant (TAP). Reactant used by Bayer to make PMPO. An organic compound with the formula $\text{CH}_2=\text{CHCN}$ . It is a colorless volatile liquid, although commercial samples can be yellow due to impurities. In terms of its molecular structure, it consists of a vinyl group linked to a nitrile. It is an important monomer for the manufacture of useful plastics such as polyacrylonitrile. It is reactive and toxic. Causes reproductive disorders and birth defects in laboratory animal test. Risk depends on duration and level of exposure.
ARCOL Polyol HS-200	VOC. Chemical Family: Polymer Polyol. Liquid, viscous, white, almost odorless. Boiling point > 392 °F. Molecular weight >20,000. Vapor Pressure < 0.001 mg Hg.
ARCOL Polyol R-3688	VOC. Polyol used as a reactant by Bayer to make PMPO. Chemical Family: Polyether Polyol. Liquid, viscous, clear.
Hyperlite Polyol E-855	VOC. Chemical Family: Polymer Polyol. Liquid, viscous, white. Odor: mild. Boiling point > 392 °F. Molecular weight < 130,000. Vapor Pressure < 0.001 mg Hg @ 68°F. Slightly soluble in water.
Isopropanol	CAS No. 67-63-0. Rubbing alcohol. VOC. Used as a reactant by Bayer to make PMPO. Colorless, liquid. Odor: Alcohol. Vapor pressure 33 mm Hg @ 20 °C. 100% soluble in water.
3689 Slab PMPO Stabilizer	VOC. Chemical Family: Polyol. Liquid, light yellow, transparent. Odor - mild.
R-3696 Molded PMPO Stabilizer	VOC. Chemical Family: Polyol. Liquid, clear to light yellow. Mild odor.

R-3722 Molded PFSI                    VOC. Chemical Family: Polyol in Organic Solvent. 40 - 70% Isopropanol; 5-10% Acrylonitrile; 5-10% Styrene. Liquid, milky white color, sweet Aromatic odor.

R-3722 R180  
Preblend II (2)                    VOC. Chemical Family: Polyol in Organic Solvent. 25-35% Isopropanol. Liquid, colorless to light yellow, alcohol-like odor. 33 mm Hg @ 68°F. Partially soluble in water.

R-3723 Slab PFS                    VOC. Chemical Family: Polyol in Organic Solvent. 20 - 30% Isopropanol. Liquid, colorless to light yellow, alcohol-like odor. 33 mm Hg @ 68°F. Partially soluble in water.

Liquid Catalyst                    Identity is confidential.

Another chemical used routinely by Bayer as a reactant to make PMPO is:

Styrene                    CAS No. 100-42-5. VOC and HAP. An organic compound with the chemical formula  $C_6H_5CH=CH_2$ . This derivative of benzene is a colorless oily liquid that evaporates easily and has a sweet smell, although high concentrations confer a less pleasant odor. Styrene is the precursor to polystyrene and several copolymers.

**Estimate of Emissions by Reviewing Engineer**

Bayer estimated (in their permit application and in their June 10, 2015 legal advertisement) that the potential to discharge Volatile Organic Compounds (VOC, isopropanol, reactant) will increase by 0.32 ton/yr from implementing the changes proposed in permit application R13-2506K.

The writer reviewed Bayer’s emission calculations and found them to be reasonable and sound. Emissions (all the tanks) involved in R13-2561K are tabulated in Table 3 below.

Emission Unit	Emission Point ID No.	Control Device	Regulated Pollutant	Emission Rate (ton/yr)		Estimate Method Used
				Uncontrolled	Controlled	
T-663	E-655	<sup>(1)</sup> Thermal Oxidizer (Y-2124)	Acrylonitrile (107-13-1)	0.077	0.01	Tanks 4.09d Stack Test
			Styrene (100-42-5)	0.0031		
			Isopropanol (67-63-0)	0.3		

**Table 3: Emissions from Tanks having a Service Change Resulting from R13-2561K.**

Emission Unit	Emission Point ID No.	Control Device	Regulated Pollutant	Emission Rate (ton/yr)		Estimate Method Used
				Uncontrolled	Controlled	
T-1461	E-1461	None	Polyol & Isopropanol	0.3165	0.3165	Tanks 4.09d
T-1462	E-1462	None	Polyol	0.005	0.005	Tanks 4.09d
T-1467	E-1467	None	Polyol	0.005	0.005	Tanks 4.09d
T-1468	E-1468	None	Polyol	0.005	0.005	Tanks 4.09d
T-8461	E-18461	None	Polyol	0.005	0.005	Tanks 4.09d
C-2405	E-2405		Polyol, Mineral Spirits & New Liquid Catalyst	0.005	0.005	*DEP Estimation Calculation for Chemical Processing

\* C-2405 (Liquid Catalyst Mix & feed tank) is too small (1,100 gallon) to run Tanks 4.09d on. To run Tanks 4.09d, the tank needs to have a capacity of at least 10,000 gallons. Bayer estimated emissions using "Methods of Emission Estimation for Chemical Process & Petroleum Industries," issued by the WVDEP-OAQ, dated January 1997.

(1) Emissions from the Thermal Oxidizer are already limited in the existing permit and did not change because of this modification. See the table in Section 4.1.1. of the permit.

**Regulatory Applicability**

**Federal Regulations:**

**40 CFR Part 60, Subpart Kb**

**Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984**

The changes in service proposed in R13-2561K and discussed above under "Changes in Tank Services" will not change any of the seven (7) process storage tanks' NSPS, Subpart Kb status:

None of the seven (7) process storage tanks listed in Table 2 are subject to NSPS, Subpart Kb requirements.

T-663 was constructed after July 23, 1984, but the tank's capacity (15,500 gal) is less than the 19,813 gallon capacity limit that triggers for NSPS, Subpart Kb applicability, i.e., T-663 is not subject to NSPS, Kb.

C-2405 will be re-constructed, but the new tank's capacity (1,100 gallons) is less than the 19,813 gallon capacity limit that triggers NSPS, Subpart Kb.

The remaining five (5) tanks (T-1461, T-1462, T-1467, T-1468 and T-8461) were constructed prior to July 23, 1984 and are not subject to NSPS, Subpart Kb.

### **State Regulations:**

**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 changes identified in the permit application R13-2561K meet the definition of a Class II Administrative Update. The applicant published the required legal notice in the local newspaper (6/10/15, Charleston Gazette), submitted a complete application and paid the appropriate fee (\$300.00) for the application.

See Attachment A, entitle "45CSR21 and 45CSR27 Source List." The entry for T-663 was revised (in red) for changes made in R13-2561K. The entry for tank T-1461 was added to the table (in red) for changes made in R13-2561K.

**45CSR21 Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds**

August 17, 2015 email from Bayer's Jim White:

From our consent order CO-R12-97-37 paragraph 7:

The COMPANY agrees that construction or modification of any emission source having maximum theoretical emissions of VOC equaling or exceeding six pounds per hour after May 1, 1996 shall require the prior approval by the CHIEF of an emission

control plan that meets the definition of Reasonably Available Control Technology (RACT) on a case-by-case basis for both fugitive and non-fugitive VOC emissions from such source.

The maximum lb/hr emission from T-663 is around 1 lb/hr so it would not have to meet RACT. Even if T-663 had to meet RACT it would already meet that requirement since BAT is more restrictive than RACT (see 45CSR27 related to T-663).

See Attachment A, entitle “45CSR21 and 45CSR27 Source List.” The entry for T-663 was revised (in red) for changes made in R13-2561K. The entry for tank T-1461 was added to the table (in red) for changes made in R13-2561K.

#### **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 technology (BAT).

Because of the change in service proposed in permit application R13-2561K, T-663 is subject to WV Rule 27 requirements due to the tank containing acrylonitrile (107-13-1).

Since T-663 is subject to Rule 27 requirements, it must meet BAT.

Bayer is proposing to vent the tank to the existing thermal oxidizer (Y-2124) which has previously been accepted by DAQ as meeting BAT.

The table in Section 4.1.1. of the previous permit (R13-2561J) established limits for VOC and acrylonitrile. These limits were not change for R13-2561K. Tank T-663 was added to the table in Section 4.1.1, under the column “Source ID.”

See Attachment A, entitle “45CSR21 and 45CSR27 Source List.” The entry for T-663 was revised (in red) for changes make in R13-2561K.

#### **45CSR30 Requirements for Operating Permits**

Due to this facility's potential to emit over 100 tons per year of VOC (a criteria pollutant), Bayer MaterialScience LLC is required to have an

operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Bayer MaterialScience submitted a dual NSR (45CSR13) and Title V (45CSR30) minor modification permit application. They currently operating under Title V permit R30-03900102-2012(MM02).

**Changes made to R13-2561J to become R13-2561K**

Deleted from - in red.

Added to or Moved to - in blue.

**#1 - Change in Service of Storage Tanks**

**Changes Made to Emission Units Table**

The following changes were made to R13-2561J to update to the Emission Units Table in R13-2561K:

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device	Comments
PP1				
T-2305	E-2305	Cat mix Tank	atm vent	Added to PMPO #1 (PP1); dedicated to PMPO#1 (Deleted from PMPO Feed System below)
PP2				
<del>T-1461</del>	<del>E-1461</del>	<del>Cat/Flex Stg</del>	<del>atm-vent</del>	Deleted from PP2 (Added to PFS - see below)
<del>T-1462</del>	<del>E-1462</del>	<del>Cat/Flex Stg</del>	<del>atm-vent</del>	Deleted from PP2 (Added to PMPO Support System - see below)
PP3				
<del>T-1467</del>	<del>E-1467</del>	<del>Cat/Flex Stg</del>	<del>atm-vent</del>	Deleted from PP3 (Added to PMPO Support System - see below)
<del>T-1468</del>	<del>E-1468</del>	<del>Cat/Flex Stg</del>	<del>atm-vent</del>	Deleted from PP3 (Added to PMPO Support System - see below)

PP4				
<del>C-2405</del>	E-2405	Cat mix tank Catalyst Storage	vents thru venturi scrubber V-2493	Deleted from PP4 C-2405 rebuilt/new; Added to PMPO Support System - see below)
<del>V2493</del>	E-657	Control device	vent to atm	Venturi scrubber no longer needed. New Catalyst not dusty.
T-103	E-103	Cat/Flex-Stg Storage	atm vent	Name changed. Will no longer store catalyst/Flex Polymer. No sure what will be stored in tank after proposed change.
T-104	E-104	Cat/Flex-Stg Storage	atm vent	Name changed. Will no longer store catalyst/Flex Polymer. No sure what will be stored in tank after proposed change.
Preformed Stabilizers (PFS)				
T-1461	E-1 461	#2 ISOP/Polyol Storage Tank	Atm vent	Added to PFS (Deleted from PP2 - see above)
T-2502	E-2502	#21 ISOP/Catalyst Preblend Tank	Atm vent	Correction
PFS Storage				
T-663	E-655	PFS Storage	Vents to T.O.	Added to PFS Storage (Deleted from PMPO Feed System - see below)
PMPO Feed System				
<del>T-2305</del>	E-2305	Cat mix tank	atm-vent-catalyst mix-tank	Deleted from PMPO Feed System (Added to PMPO #1 - see above); dedicated to PMPO#1
C-2405	E-2405	Cat mix to feed tank	atm vent	*****New Construction ***** New C-2405 Added to PMPO Feed System  (Old C-2405 Deleted from PP4 - see above)  Feeds new liquid catalyst to PMPO#2, #3 and #4
<del>T-663</del>	<del>E-663D</del>	Storage Tank	atm-vent	Deleted from PMPO Feed System (Added to PFS Storage - see above)
PMPO Support System				

T-616	E-655	Storage/decanting of wastewater	Vents to T.O. <del>&amp; atm</del> ( <del>limited-permitted amt</del> )	Emergency Vent Valve (HV-61609) was removed
T-1462	E-1462	Storage (stabilizer)	atm vent	Added to PMPO Support System (Deleted from PP2 - see above)
T-1467	E-1467	Storage (Polyol)	atm vent	Added to PMPO Support System (Deleted from PP3 - see above)
T-1468	E-1468	Storage	atm vent	Added to PMPO Support System (Deleted from PP3 - see above)
T-8461	E-8461	Storage	atm vent	Under New R13-2561K storing Polyol R-3689 (Under Old R13-2561J storing Polyol E-917)

## #2 - Addition of new chemical.

As noted above, Bayer submitted the required paperwork in permit application R13-2561K to allow the DAQ to safeguard the identity/confidentiality of the new chemical/catalyst. A Material Safety Data Sheet (MSDS) for the chemical was submitted within the application. The identity of the chemical is not divulged within the permit (R13-2561K).

## #3 - Storage tank (T-663) vented to thermal oxidizer (Y-2124).

The above change impacts Sections 1, 4 and 5 of permit R13-2561J:

- Section 1 - 1.0 Emission Units Table.
- Section 4 - Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production #3 (PP3), and Polymer Production #4 (PP4).
- Section 5 - Preformed Stabilizer (PFS) Process

Changes to the 1.0 Emission Units Table are shown below:

1.0 Emission Units				
Table 1.1 - Polymer Polyols Emissions Group				
	Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
Before R13-2561K	PMPO Feed System			
	T-663	E-663D	Storage Tank	atm vent
After R13-2561K	<del>PMPO Feed System</del>			
	<del>T-663</del>	<del>E-663D</del>	<del>Storage Tank</del>	<del>atm vent</del>
	PFS Storage			
	T-663	E-655	PFS Storage	vents to T.O. E-655

#### 4.0. Source-Specific Requirements

Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production #3 (PP3), and Polymer Production #4 (PP4) formally permitted under R13-1182E

##### 4.1. Limitations and Standards

4.1.1. Emissions to the atmosphere as point source emissions shall not exceed the following:

Emission Point ID	Source ID	Control Device ID	Pollutant	Emission Limit														
				PPH	TPY													
E-655	PMPO #1	Y-2124	CO	0.18	0.71													
	PMPO #2																	
	PMPO #3																	
	PMPO #4																	
	T-109					NO <sub>x</sub>	1.65	6.51										
	T-632																	
	T-626								VOC	0.39	0.32							
	T-616																	
	T-693											Acrylonitrile	0.01	0.01				
	T-631																	
	T-684														Benzene	0.1	0.01	
	T-686																	
	<del>T-663</del>																	Ethyl Benzene
Switch Rack #8																		
T-2448	Xylene	0.1	0.01															

#### 5.0. Source-Specific Requirements

Preformed Stabilizer Process formally permitted under R13-1730B

5.1.1. Emissions generated from Preformed Stabilizer storage tank T-632, T-663, T-684, and T-686 shall be vented to the waste gas thermal oxidizer (Y-2124) and vented to atmosphere through emission point E-655, covered in Section 4.0 of this permit.

5.2.1. For the purpose of demonstrating compliance with the limits set forth in Section 4.1.1. of this permit, the permittee shall monitor the tank throughput rates of the storage tanks T-632, T-663, T-684 and T-686. Compliance with the annual limits set forth in Section 5.1. shall be determined using a 12-month rolling total. A 12-month rolling total shall mean the total throughput in gallons at any given time for the previous twelve (12) consecutive calendar months.

5.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 5.2.1. of this permit, the permittee shall record the tank throughput rates of the storage tanks T-632, T-663, T-684 and T-686.

**Changes # 4 and # 6:**

- 4) Replacement of catalyst mix tank C-2405 and
- 6) Removal of dust collector requirement for PMPO catalyst addition

Due to the old PMPO catalyst being a solid, dust collection (Venturi Scrubber V-2493) was required for PMPO#4 (PP4) catalyst addition system. Bayer is requesting the current control device (Venturi Scrubber V-2493) requirement be deleted.

Changes #4 and #6 impact Sections 1, 4 and 5 of permit R13-2561J:

Section 1 - 1.0 Emission Units Table.

Section 4 - Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production #3 (PP3), and Polymer Production #4 (PP4).

Changes made to the 1.0 Emission Units Table are shown below:

1.0 Emission Units				
Table 1.1 - Polymer Polyols Emissions Group				
	Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
Before R13-2551K	PP4			
	C-2405	E-2405	Cat mix tank Catalyst Storage	vents thru venturi scrubber V-2493
	V-2493	E-657	Control device	vent to atm
After R13-2561K	PP4			
	<del>E-2405</del>	<del>E-2405</del>	<del>Cat mix tank Catalyst Storage</del>	<del>vents thru venturi scrubber V-2493</del>

1.0 Emission Units			
Table 1.1 - Polymer Polyols Emissions Group			
Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
V-2493	E-657	Control device	vent to atm
PMPO Feed System			
C-2405	E-24-5	Cat mix feed tank (feeding PP2, PP3 and PP4))	atm vent

**4.0. Source-Specific Requirements**

Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production #3 (PP3), and Polymer Production #4 (PP4) formally permitted under R13-1182E

**4.1. Limitations and Standards**

4.1.1. Emissions to the atmosphere as point source emissions shall not exceed the following:

Emission Point ID	Source ID	Control Device ID	Pollutant	Emission Limit	
				PPH	TPY
E-657	C-2405	V-2493	PM <sub>10</sub> VOE	- 0.2	0.01 0.01

4.1.3. The following provisions only apply to the Polymer Polyol Production Unit #4 production unit.

a. During normal operations, emissions from the Polymer Polyol Production Unit #4 vacuum jet condenser vent are to be routed to the thermal oxidizer (File under R13-1729A; ID: S-9), and subsequently vented through emission point E-655.

~~b. The permittee shall vent tank C-2405 to a Ceilcote, EVS-3 Eductor System (ID V-2493).~~

~~1. The venturi scrubber shall be operated at all times during catalyst addition with a minimum liquor flow rate as required for proper operation.~~

~~2. The maximum number of catalyst make-up batches shall not exceed 700 in a calendar year. For compliance determination the permittee shall maintain records of all catalyst make-up batches.~~

4.4.5. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 4.2.2. of this permit, the permittee shall maintain the following records of operation on a daily bases:

a. Combustion chamber temperature of the thermal oxidizer, Y-2124, and the flow rate of waste gas into the thermal oxidizer.

~~b. Liquor flow rate of the Cellicote, EVS-3 Eductor System.~~

c.b. Emergency venting hours for E-651, E-653, E-652/E-654 (not additive), and E-658.

## **#5 - Modification of wastewater stripper (C-2044) column design**

The following requirement was added to permit R13-2561K, based on information contained in permit application R13-2516K.

### **6.0. Source-Specific Requirements**

PMPO Storage Tank and Loading Racks formally permitted under R13-2429A.

6.1.11.5. The permittee shall notify the DAQ at least 30 days in advance of any performance test to be conducted on the wastewater stripper column.

An application to modify the permit shall be submitted if performance test results show the requirements in 6.1.12 have changed as a result of changes made to the wastewater stripper column.

## **#7 - Removal of emergency venting (HV-616-09) for a wastewater tank (T-616).**

An automatic control valve (HV-616-09) was installed on the wastewater tank (T-616) that feeds the stripper column to vent the tank to the atmosphere during periods of shutdown or malfunction. This control (vent) valve was only used during periods when the wastewater stripper or acrylonitrile treater was malfunctioning or shutdown to prevent shutdown of the thermal oxidizer. It was determined the atmospheric venting of T-616 was not required and the control valve (HV-661-09) was removed.

The writer ask Bayer: Page 10 of application under PMPO Support System: Why is Tank T-616 not shown with proposed changes about eliminating control valve HV-61609?

Bayer's response: I didn't see T-616 on page 10 of the application. I should have included. T-616 is on page 8 of the R-13 permit. The comment under control device needs to be modified to "Vents to T.O." Removed "& atm (limited permitted amt)". When we added the steam stripper and replaced T-616 some years ago it was felt an emergency vent was needed to prevent popping the tank relief valve when the stripper shut down suddenly, but it turned out this was not the case and the emergency vent valve was removed.

Change #7 impact sSections 1, and 6 of permit R13-2561J:

Section 1 - 1.0 Emission Units Table.

Section 6 - PMPO Storage Tank and Loading Racks formally permitted under R13-2429A.

1.0 Emission Units				
Table 1.1 - Polymer Polyols Emissions Group				
	Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
<b>Before R13-2561K</b>	<b>PMPO Feed System</b>			
	T-616	E-655	Storage/decanting of wastewater	Vents to T.O. & atm <del>(limited permitted amt)</del>
<b>After R13-2561K</b>	<b>PMPO Feed System</b>			
	T-616	E-655	Storage/decanting of wastewater	Vents to T.O.

**6.0. Source-Specific Requirements**

PMPO Storage Tank and Loading Racks formally permitted under R13-2429A.

- 6.1.10. ~~During periods of malfunction that causes the acrylonitrile treater to shut down while wastewater transfer system operations are being conducted, the permittee may operate an automatic control valve identified as HV-616-09 to relieve the pressure of Tank T-616 to a safe level. The operation of the vent valve HV-616-09 during periods of acrylonitrile treater malfunctions is required to avoid a potential shutdown of the thermal oxidizer if it is not already shutdown because of the other causes. The total duration of each individual venting event from HV-616-09 shall not exceed one hour and the number of events over a 12-month period shall not exceed five (5). In the event that a sixth event occurred during a 12-month period, the permittee must submit to the Director a permit determination outlining a plan to control the emissions from this point source no later than the 30<sup>th</sup> day after which the sixth (6) event occurred. [Reserved]~~

**Attachment A  
45CSR21 and 45CSR27 Source List**

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-600 E-3101 E-3192	C-3101	No. 1 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-601 E-3201 E-3192	C-3201	No. 2 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-620 E-3301	T-620	No. 3 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-636	C-5201	No. 7 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-637	C-5301	No. 8 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-638	C-5401	No. 9 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-647	C-5201	Stabilizer Reactor System	C-5340		None	Yes	No	No	No	C-5340 demolished
E-655		PMPO #1	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-651)
E-655		PMPO #2	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-653)
E-655		PMPO #3	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-652/E-654)

**Attachment A  
45CSR21 and 45CSR27 Source List**

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-655		PMPO #4	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	No	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-656)	
E-5550	T-5550	Tank 7 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No		
E-5650	T-5650	Tank 8 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No		
E-5750	T-5750	Tank 9 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No		
E-655	T-626	Tank 626 (Acrylonitrile Tank)	Y-2124 (S-9)	HAP/TAP	R13-2429A	Yes	Yes	No	Vents to Thermal Oxidizer	
E-686	T-686	Tank 686 (PFS Storage)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	Yes	No	No	Vents to Thermal Oxidizer (R13-2561H)	
E-655	T-663	Tank 663	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	Yes	Yes	Yes	Vents to Thermal Oxidizer (R13-2561K)	
N/A	C-102	Tank North Sphere		HAP/TAP	R13-2561A	Yes	Yes	No	Exempted by 40 CFR 63.1423	
N/A	C-101	Tank South Sphere		HAP/TAP	R13-2561A	Yes	Yes	No	Exempted by 40 CFR 63.1423	
N/A	T-9016	Tank 9016 (PO Storage - NC)		HAP/TAP	R13-2561A	Yes	Yes	No	Exempted by 40 CFR 63.1423	
N/A	T-9017	Tank 9017 (PO Storage - NC)		HAP/TAP	R13-2561A	Yes	Yes	No	Exempted by 40 CFR 63.1423	
N/A	T-9018	Tank 9018		Removed From Service		Yes	Yes	No	Lyondell Chemical is the current owner.	
E-662	C-3404	No. 1 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	

**Attachment A  
45CSR21 and 45CSR27 Source List**

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-663	C-3406	No. 1 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
	C-3504	No. 2 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
	C-3506	No. 2 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
E-664	C-3604	No. 5 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
	C-3606	No. 5 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
E-608	H-3477	No. 1 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	Yes	Deminimus TAP's	
E-609	H-3577	No. 2 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	Yes	Deminimus TAP's	
E-610	H-3677	No. 5 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	Yes	Deminimus TAP's	
E-640	C-5504	No. 7 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	No	Deminimus TAP's	
E-643	C-5506	No. 7 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
E-641	C-5604	No. 8 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	No	Deminimus TAP's	
E-644	C-5606	No. 8 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
E-642	C-5704	No. 9 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	No	Deminimus TAP's	
E-645	C-5706	No. 9 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	
E-5804	C-5804	No. 10 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	No	Deminimus TAP's	
E-5806	C-5806	No. 10 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus TAP's	

**Attachment A  
45CSR21 and 45CSR27 Source List**

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-658	H-2443	PMPO #4 Vacuum Jets			R13-1182E	No	No	No	Yes	Option to operate while not venting to T.O. removed. Covered by PMPO requirement now.
E-655	Y-2124	Thermal Oxidizer	S-9	VOC/HAP/TAP	R13-1182E	Yes	Yes	Yes	Yes	
	D-2124A	Scrubber	C-658		R13-1182E	No	No	No	No	Scrubber D-2124A [C-658] removed from service
E-655	T-631	Tank 631	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	
E-655	T-632	Tank 632 (PFS Storage)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	No	Yes	Yes	Yes	
E-655	T-616	Tank 616 (Wastewater Storage/Decanter)	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	
E-655	T-693	Tank 693 (Waste Monomer Tank)	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	Not in acrylonitrile service
E-683	T-683	Tank 683 (Styrene)		HAP	R13-2429A	No	No	No	No	Subject to Reg. 21, Section 37 LDAR
E-687	T-687	Tank 687 (Styrene)		Placed into Styrene (HAP) Service 07/2013 under R13-25611	R13-2429A	No	No	No	No	Subject to Reg. 21, Section 37 LDAR

**Attachment A  
45CSR21 and 45CSR27 Source List**

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-1463	T-1463	Tank 1463 (Intermediate or Make Tank)		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus HAP/TAP's	
E-1464	T-1464	Tank 1464 (Intermediate or Make Tank)		VOC/HAP/TAP	R13-2561A	No	No	No	Deminimus HAP/TAP's	
E-1458	T-1458	Tank 1458 (#2 ISOP/Polyol)		VOC	R13-1730B	No	No	No	No longer contains HAP/TAP's	
E-684	T-684	Tank 684 (Preformed Stabilizer)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	No	No	No	Vents to Thermal Oxidizer	
E-7101	C-7000	C-7000 (EO Tank & Ancillary Equipment)	Y-7101 (EO Scrubber)	VOC/HAP/TAP	R13-2561J	No	No	Yes	PPP MACT	
<b>E-1461</b>	<b>T-1461</b>	<b>Tank 1461 (#2 ISOP/Polyol)</b>		<b>VOC</b>	<b>R13-2561K</b>	<b>No</b>	<b>No</b>	<b>No</b>		