

To: File  
From: John Legg  
Date: 04/04/16

*John Legg*  
*4/4/16*

Subj: R13-2156X (Class I Administrative Update)  
Cytec Industries Inc., Willow Island Plant, Pleasants County, WV  
Permit Application R13-2156X; Plant ID No. 073-00003

**This update application results in no changes to previous permitted emission limits.**

### **Background Information**

On February 11, 2016, the Division of Air Quality (DAQ) received permit application R13-2156X for a Class I Administrative Update.

(Note: A Class I Administrative Update does not require the company/permittee to:  
- pay a permitting fee or  
- run a legal advertisement in a newspaper.)

This application updates permit R13-2156W based on revisions made to the Polymer Additives Manufacturing Unit (Building 82) in the 2<sup>nd</sup> half of 2016. It is required per Section 4.5.5. of permit R13-2156W:

4.5.5. Written notification of any revisions of the Building 82 Manufacturing Unit equipment/emission units, control devices, or emissions points as listed in Sections 1.0, 4.1.6, and 4.1.17, or Appendix A of this permit, shall be submitted to the Director of the Division of Air Quality by August 15<sup>th</sup> for the calendar semi-annual time period of January 1<sup>st</sup> through June 30<sup>th</sup>, and by February 15<sup>th</sup> for the calendar semi-annual time period of July 1<sup>st</sup> through December 31<sup>st</sup> in which the revision occurred.

The Polymer Additives Manufacturing Unit (Building 82) manufactures ultraviolet light absorbers, antioxidants, anti-static agents, depressant reagents and phenolic resins.

### **Like-kind Replacement of Existing Reactor**

As part of this class I administrative update (R13-2156X), Cytec submitted a new Emissions Unit Data Sheet (EUDS) with a reactor identification number of 2-14K1 [Emission Unit ID: 14HX]. The EUDS is for the like-kind replacement for existing reactor 2-14K2, both reactors utilizing existing Condensers (3-14CD1 and 3-14CD3). The reactor has no control device and vents via existing emission points 14DE and 14EE. The reactor is a vertical vessel of 4,000 gallons, made of Hastelloy C-276, with a design pressure of 185 psi. The manufacturer is Fourinox and the Model Number is NB2558. For additional information see the permit application, Attachment L.

**Changes to R13-2156W**

Changes made to the permit R13-2156W are summarized in Table 1 below:

**Table 1: Summary of Changes Made During 2nd Half of 2015.**

Permit Section	Revisions
1.0	- Add the new Product/Process Areas: "UHX-2000" and "UHX-3000" utilizing exiting equipment. - Correct typo.
2.0	- Permit revision level updates to Sections 2.4.1 and 2.5.1.
3.0	- No changes.
4.0	- No changes.
Appendix A	- No changes.
Appendix B	- No changes.

Cytec provided a complete, unabridged draft permit in their application (Appendix 2, Attachment 2 in the permit application). An abridged compare file showing only the changes made to the permit since last time is given in Attachment 1 to this evaluation.

**Permit**

**Section 1.0 - Add the new Product/Process Area: "UHX-2000" and "UHX-3000" utilizing exiting equipment (R13-2156W – Appendix 1, Attachment G).**

Cytec added the new product UHX-2000 and UHX-3000 to its Polymer Additives manufacturing business with Building 82, utilizing existing process equipment, as follows:

Table 1: New Product/Process Area – UHX-2000 and UHX-3000.					
Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
20EX	20EE	Condensate Receiver (3-20T1)	--	--	NA
20FX	20DE	Vacuum Jet (3-19VJ1)	--	--	NA
20LX	20AE	Splitter Bowl (2-19SB1)	--	--	NA
20NX	20AE	Strip Kettle (2-19K2) with Condensers 3-20CD1 & 3-20CD1A	--	--	NA
20PX	20PE	Split Receiver (1-20T1)	--	--	NA
21DX	21DE	Industrial Hygiene Hood Over Reactor 21DX	--	--	NA
	20BE	Reactor (2-20K1) with Condensers 3-22CD1 & 3-22CD1A	--	--	NA
22KX	20BE	Splitter Bowl (2-20SB1)	--	--	NA
24TX	24FE	Drumming Station (1-24D1)	--	--	NA

Per R13-2156W, Section 4.1.5, compliance with the emission limits set forth in Section 4.1.1 are demonstrated by calculating emissions for every product in the Building 82 Manufacturing Unit using Emission Master®, emission modeling software, or other appropriate emission/discharge estimation models or

calculation methodologies (e.g., ChemCAD®, PlantWare®, USEPA’s Tanks 4.0, etc.). The emission models and other calculation methods are maintained current for all processes, process modifications and new product variants.

The emission/discharge estimation models and calculation methodologies developed in Section 4.1.5, as well as production records for each calendar month are maintained on site for a period of five (5) years.

Product MSDS

MSDS’s for new products “UHX2000 S-11092” and “UHX3000 S-11093” are provided in the permit application (Appendix 1, Attachment H). These product MSDs are summarized in the Tables 2 and 3 below:

<b>Table 2 - MSDS Summary for UHX2000 S-11092                      (See Appendix 1, Attachment H, pages 2-13                      in Permit Application R13-2156X.)</b>			
<b>Product Name:</b>	S-11092 [UHX2000]		
<b>Product Description:</b>	Modified polyacrylamide in water-in-oil emulsion		
<b>Synonyms</b>	None		
<b>Chemical Family:</b>	Modified Polyacrylamide		
<b>Molecular Formula:</b>	Mixture		
<b>Molecular Weight:</b>	Mixture		
<b>Intended/ Recommended Use:</b>	Flocculant		
<b>Components</b>	<b>Component</b>	<b>CAS No.</b>	<b>%</b>
<b>Substance, Mixture or Article? Mixture</b>	Petroleum distillate hydrotreated light	64742-47-8	20 - 25%
	Naphta (petroleum), hydrotreated heavy; low boiling point thermally cracked naphta	64742-48-9	1.0 – 3.0 %
	Ammonium hydroxide	1336-21-6	1.0 – 2.0%
	Ethoxylated oleyl amine	26635-93-8	1.0 – 1.5 %
	Nonylphenol, branched, ethoxylated	127087-87-0	<1 %
	Sodium hydroxide	1310-73-2	0.3 – 1.0%

<b>Table 3 - MSDS Summary for UHX3000 S-11093 (See Appendix 1, Attachment H, pages 13-22 in Permit Application R13-2156X.)</b>			
<b>Product Name:</b>	S-11093 [UHX3000]		
<b>Product Description:</b>	Modified polyacrylamide in water-in-oil emulsion		
<b>Synonyms</b>	None		
<b>Chemical Family:</b>	Modified Polyacrylamide		
<b>Molecular Formula:</b>	Mixture		
<b>Molecular Weight:</b>	Mixture		
<b>Intended/ Recommended Use:</b>	Flocculant		
<b>Components</b>  <b>Substance, Mixture or Article? Mixture</b>	<b>Component</b>	<b>CAS No.</b>	<b>%</b>
	Petroleum distillate hydrotreated light	64742-47-8	20 - 25%
	Naphta (petroleum), hydrotreated heavy; low boiling point thermally cracked naphta	64742-48-9	1 - 5 %
	Ammonium hydroxide	1336-21-6	0.5 - 1.5%
	Ethoxylated oleyl amine	26635-93-8	0.5 - 1.5 %

**Supporting Emission Calculations (see Appendix 1, Attachment N of Permit Application R13-2156X)**

The maximum emission estimates for every product and associated process in the polymer Additives Manufacturing Unit were calculated using either Emission Master™ emission modeling software, or other appropriate emission estimation models and calculations methodologies, as required by R13-2156W, Section 4.1.5:

- 4.1.5. Compliance with the emission limits set forth in Section 4.1.1, shall be demonstrated by calculating emissions for every product in the Building 82 Manufacturing Unit using Emission Master®, emission modeling software, or other appropriate emission/discharge estimation models or calculation methodologies (e.g., ChemCAD®, PlantWare®, USEPA's TANKS 4.0, etc.). When these emissions are calculated, each emission point listed in Section 1.0 with emissions of regulated air pollutants listed in Section 4.1.1 shall be included in the calculations and accounted for in the emission estimates. The emission models and other calculation methods shall be maintained current for all processes, process modifications and new product variants. The Director of the Division of Air Quality may specify or may approve other valid methods for compliance determination when he or she deems it appropriate and necessary.

Cytec has determined the maximum potential annual emissions of the new "UHX-2000" and "UHX-3000" products to be the following, based upon forecasted maximum annual production:

Table 4: UHX-2000 & UHX-3000 Potential Emissions Based Upon Forecasted Maximum Annual Production.

Pollutant	CAS No.	HAP?	Maximum Emission Rate	
			Hourly (lb/hr)	Annual (lb/yr)
Total PM	-	-	<0.008	<1.5
Total VOC	-	-	0.45	92.0

**REGULATORY APPLICABILITY**

State Regulations:

45CSR7 To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations

This rule applies to the facility. The new “UHX-2000 and UHX-3000” manufacturing process emits a trivial quantity of dilute sodium hydroxide (<0.008 lb/hr and <1.5 lb/yr). Cytec believes this extremely low emission rate of PM is not subject to 45CSR7-4.1 because of the exemption listed in 45CSR7-10.5:

45CSR7-10.5. The owner or operator of a manufacturing process shall be exempt from subsection 4.1 for source(s) of emissions that have a potential to emit less than one (1) pound per hour of particulate matter and an aggregate of less than one thousand (1,000) pounds per year for all such sources of particulate matter located at the stationary source. Particulate matter, for the purposes of this subsection, will not include particulate matter classified as hazardous air pollutants pursuant to 42 U.S.C. §7412(b).

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.

Cytec submitted an application for a Class I Administrative Update. Class I Administrative Updates do not required the company to pay a permitting fee or to ran a legal advertisement.

The new UHX-2000 and UHX-3000 process emits a very small quantity (0.42 lb/hr and 92.0 lb/yr) of volatile organic compounds (VOC). The UHX-2000 and UHX-3000 process was added to R13-2156X. The monitoring, recordkeeping and reporting requirements of the previous permit were deemed adequate to ensure compliance with all applicable requirements and were not changed in R13-2156X.

40CSR30 Requirements for Operating Permits

Cytec Industries is a Title V source. The Company submitted a combined permit application for a minor modification to their Title V permit [R30-07300003-2010 (MM09); (Part 4 of 4)] at the same time this Rule 13 permit application was submitted.

See Attachment S in the permit application for the form entitled: "Title V Permit Revision Information."

45CSR34 Emission Standards for Hazardous Air Pollutants for Source Categories Pursuant to 40 CFR, Part 63.

Cytec is subject to WV State Rule 34 because their facility is subject to MACT regulations.

Federal Regulations:

40CFR63,  
Subpart FFFF

National Emission Standards for Hazardous Air Pollutions: Miscellaneous Organic Chemical Manufacturing (MON)

The new "UHX-2000 and UHX-3000" manufacturing process is not subject to the Miscellaneous Organic NESHAP (MON MACT) Subpart FFFF because the process does not utilize nor emit any hazardous air pollutant.

Site Inspection

No site inspection was conducted for this update. The facility's location is known to the Enforcement Section of the DAQ who conducts periodic inspections. The last targeted full onsite inspection of the Polymers Additives Unit was conducted in April 30, 2015 by Dan Bauerle. That inspection found the facility in compliance (status code 30).

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Attachment 1

**Changes Make to Permit R13-2156W  
to Arrive at Permit R13-2156X**

*West Virginia Department of Environmental Protection  
Division of Air Quality*

*Earl Ray Tomblin  
Governor*

*Randy C. Huffman  
Cabinet Secretary*

## Class I Administrative Update



**R13- ~~2156W~~2156X**

*This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 13 – Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.*

*Issued to:*  
**Cytec Industries, Inc.**  
Willow Island, WV  
073-00003

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*William F. Durham  
Director*

*Issued: ~~October 16, 2015~~ Effective: October 16, 2015*

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DRAFT

This permit will supersede and replace Permit R13-~~2156W~~2156W approved ~~April 24~~October 16, 2015.

Facility Location: Willow Island, Pleasants County, West Virginia  
Mailing Address: #1 Heilman Avenue, Willow Island, WV 26134  
Facility Description: Building 82 Manufacturing Unit  
SIC Codes: 2869: Chemicals and Allied Products – Industrial Organic Chemicals, NEC  
2899: Chemicals and Allied Products – Chemical Preparations, NEC  
2843: Surface Active Agents, Finishing Agents, Sulfonated Oils, and Assistants

UTM Coordinates: 473.4 km Easting • 4,356.2 km Northing • Zone 17

Permit Type: Class H Administrative Update

Description of Change: Revisions made in the Polymer Additives manufacturing unit during the ~~first~~second half of 2015 and updated per semiannual reporting requirement of Section 4.5.5.

~~Add existing Waste Hold Tank 181X (S-18T1) for the Product/Process Area HALS (UV3346, UV3529, UV4593, UV4611, UV4801, UV4802, UV6435, UV6460).~~

- Add the new Product/Process Area Aerosol-GPG-N with UHX-2000 and UHX-3000 which utilizes existing equipment.

~~Make minor clarifications and correct~~ - Correct typos.

*Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.*

*The source is subject to 45 C.S.R. 30. The permittee has the duty to update the facility's Title V (45 C.S.R. 30) permit application to reflect the changes permitted herein.*

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
13MX	NA	Conveyor (1-13SCV1)	--	--	NA
13NX	13JE	Industrial hygiene vent on Bagger (1-13BAG1)	--	--	13JC
13HY	NA	Wet Bin (2-13BN1)	--	--	NA
14CX	14CE	Wash Tank (3-14T1)	--	--	NA
14FX	14BE	Reactor (2-14K2) and Condensers (3-14CD2 & 3-14CD4)	--	--	NA
14FX	14EE	Industrial hygiene vent on Reactor (14FX)	--	--	NA
14GY	14GE	Condensate Receiver (1-14T2) and Condenser (1-14CD1) and Vacuum Pump (15CX)	--	--	NA
14HX	14DE	Reactor (2-14K2, 14K1) and Condensers (3-14CD1 & 3-14CD3)	--	--	NA
14HX	14EE	Industrial hygiene vent on Reactor (14HX)	--	--	NA
15BX	13JE	Industrial hygiene vent on Dryer (1-15D1)	--	--	13JC
15BX	14GE	Vacuum Dryer (1-15D1)	--	--	NA
15EX	15EE	Centrifuge (3-15W1)	--	--	NA
15EY	NA	Wet Bin (2-15BN1)	--	--	NA
	13JE	Industrial hygiene hood over Wet Bin	--	--	13JC
15FX	15FE	Wash Tank (3-15T1)	--	--	NA
15PX	NA	Dry Bin (1-15BN1)	--	--	NA
15QX	NA	Screener (1-15SCR1)	--	--	NA
16JX	16JE	Reactor (3-16K1)	--	--	NA
16JX	18JE	Industrial hygiene vent on Split Recycle (16JX)	--	--	NA
16UX	16CE	Reactor (2-16K1) with Condenser (3-16CD1 & 3-16CD5)	--	--	NA
16UX	18JE	Industrial hygiene vent on Reactor (16UX)	--	--	NA
16WX	16BE	Vacuum Strip Crystallizer (2-16K2) with Condenser (3-16CD2)	--	--	NA
16WX	18JE	Industrial hygiene vent on Reactor (16WX)	--	--	NA
16YX	NA	Conveyor (1-16SCV1)	--	--	NA
16ZX	13JE	Industrial hygiene vent on Bagger (1-16BAG1)	--	--	13JC
17AX	17AE	Methanol Drown Tank (3-17T1)	--	--	NA
17GX	17QE	Split Tank (2-17K1)	--	--	17VC
17JX	17QE	Mix Tank (2-17K2)	--	--	17VC
17PX	17QE	Condensate Receiver (3-17T2) and Condensers (3-16CD3 & 3-16CD4) and Vacuum Pump (17QX)	--	--	17VC
17PX	18JE	Industrial hygiene vent on Condensate Receiver (17PX)	--	--	NA
18SX	18ME	Hold Tank (2-18K1) with Condenser (3-18CD1)	--	--	18VC, 11VC
20BX	22BE	Condensate Receiver (2-21T3) and Condenser (2-21CD1) and Vacuum Pump (22 PX)	--	--	NA
20KX	20KE	Reactor (2-19K1) with condenser 3-19CD1	--	--	NA

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
25EX	22QE	Industrial hygiene hood over Wet Bin	--	--	22QC
26FX	22BE	Agitated Filter Dryer (2-26F1)	--	--	NA
26HX	26GE	Packaging Unit (1-26BAG1)	--	--	26GX
Control Device ID	Emission Units Controlled	Emission Point	Control Device Description		Next Control Device in Series
22QC	21AY, 22BX, 21WX, 22DX, 23AX, 25EX	22QE	Dust Collector (RF-22DC1)		NA
26GX	26HX	26GE	Dust Collector		NA
<b>Product/Process Area – Aerosol GPG-N</b>					
21DX	20BE	Reactor with condensers 3-22CD1 and 3-22CD1A	--	--	NA
	21DE	Industrial hygiene hood over reactor	--	--	NA
22KX	20BE	Splitter Bowl	--	--	NA
20PX	20PE	Split Receiver	--	--	NA
20EX	20EE	Condensate Receiver	--	--	NA
20FX	20DE	Vacuum Jet (3-19VJ1)	--	--	NA
24TX	24FE	Drumming Station	--	--	NA
<b>Product/Process – UHX-2000 and UHX-3000</b>					
20EX	20EE	Condensate Receiver (3-20T1)	=	=	NA
20FX	20DE	Vacuum Jet (3-19VJ1)	=	=	NA
20LX	20AE	Splitter Bowl (2-19SB1)	=	=	NA
20NX	20AE	Strip Kettle (2-19K2) with Condensers 3-20CD1 & 3-20CD1A	=	=	NA
20PX	20PE	Split Receiver (1-20T1)	=	=	NA
21DX	21DE	Industrial Hygiene Hood Over Reactor 21DX	=	=	NA
	20BE	Reactor (2-20K1) with Condensers 3-22CD1 & 3-22CD1A	=	=	NA
22KX	20BE	Splitter Bowl (2-20SB1)	=	=	NA
24TX	24FE	Drumming Station (1-24D1)	=	=	NA
<b>Product/Process Area – Batch Column</b>					
141X	NA	Still Pot	--	--	NA
142X	NA	Batch Column with Condenser (S-14CD1)	--	--	NA
154X	11ME	Reflux Drum with Condenser (S-14CD1)	--	--	11MV
162X	11ME	Recovered Solvent Receiver	--	--	16VC, 11VC
163X	11ME	Wet Solvent Receiver	--	--	16VC, 11VC
S-15EX1	NA	Reboiler	--	--	NA

Formatted Table

### 2.3. Authority

This permit is issued in accordance with West Virginia air pollution control law W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

- 2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation;*

### 2.4. Term and Renewal

- 2.4.1. This permit supersedes and replaces previously issued Permit R13-~~2156V~~2156W. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any other applicable legislative rule;

### 2.5. Duty to Comply

- 2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R13-0190, R13-0671, R13-0794, R13-1006, R13-1018, R13-1082B, R13-1114C, R13-1535C, R13-1735, R13-2156, R13-2156A, R13-2156B, R13-2156C, R13-2156D, R13-2156E, R13-2156F, R13-2156G, R13-2156H, R13-2156I, R13-2156J, R13-2156K, R13-2156L, R13-2156M, R13-2156N, R13-2156O, R13-2156P, R13-2156Q, R13-2156R, R13-2156S, R13-2156T, R13-2156U, R13-2156V, R13-2156W, ~~R13-2156X~~ and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;  
[45CSR§§13-5.11 and -10.3.]
- 2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;
- 2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;
- 2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

### 2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.