

Fact Sheet



For Final Renewal Permitting Action Under 45CSR30 and Title V of the Clean Air Act

Permit Number: **R30-03900005-2017**
Application Received: **December 22, 2016**
Plant Identification Number: **03900005**
Permittee: **Union Carbide Corporation**
Facility Name: **Institute Facility**
Business Unit: **Water Soluble Polymers (Group 5 of 8)**
Mailing Address: **P. O. Box 8361, South Charleston, WV 25303**

Physical Location: Institute, Kanawha County, West Virginia
UTM Coordinates: 432.189 km Easting • 4,248.754 km Northing • Zone 17
Directions: From I-64, take the Institute exit, turn right onto State route 25. Plant entrance is located about 1/4 mile west on Route 25.

Facility Description

The Polyox WSR® is a water-soluble polymer used in pharmaceuticals, personal care products, adhesive, and flocculation markets. The Polyox WSR® unit manufactures polyethylene oxide (PEO) by polymerizing ethylene oxide. It is manufactured by reacting various chemicals to form a solid in the presence of a diluent. The POLYOX® solids are packaged for worldwide distribution. The POLYOX® Plant uses a flare, a vent scrubber, and a baghouse to control emissions. SIC: 2869

Emissions Summary

Emissions Summary [Tons per Year]		
Regulated Pollutants	Group 5 Potential Emissions	Group 5 2015 Actual Emissions
Carbon Monoxide (CO)	16.40	1.86

Emissions Summary [Tons per Year]

Regulated Pollutants	Group 5 Potential Emissions	Group 5 2015 Actual Emissions
Nitrogen Oxides (NO _x)	3.01	0.35
Particulate Matter (PM _{2.5})	8.60	0.03
Particulate Matter (PM ₁₀)	8.60	0.03
Total Particulate Matter (TSP)	8.60	0.03
Sulfur Dioxide (SO ₂)	1.86	0.01
Volatile Organic Compounds (VOC)	620	208.46

PM₁₀ is a component of TSP.

Hazardous Air Pollutants	Group 5 Potential Emissions	Group 5 2015 Actual Emissions
Total HAPs	3.10	1.58

Some of the above HAPs may be counted as PM or VOCs.

Title V Program Applicability Basis

This facility has the potential to emit over 100 TPY of CO, NO_x, and VOC's, as well as over 10 TPY of a single HAP and 25 TPY of total HAP's. Due to the facility-wide potential to emit over 100 tons per year of criteria pollutants, over 10 tons per year of a single HAP, and over 25 tons per year of aggregate HAPs, Union Carbide Corporation is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR6	Open burning prohibited.
	45CSR7	Particulate matter and opacity limits for manufacturing sources.
	45CSR11	Standby plans for emergency episodes.
	45CSR13	Preconstruction permits for minor sources.
	WV Code § 22-5-4 (a) (14)	The Secretary can request any pertinent information such as annual emission inventory reporting.
	45CSR30	Operating permit requirement.
	45CSR34	Emission Standards for Hazardous Air Pollutants.
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. 63, Subpart PPP	Polyether Polyols MACT
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances

State Only:	45CSR4 45CSR§§21-37 and 40 45CSR27	No objectionable odors. Control of VOC Emissions Best Available Technology (BAT) for HAPs
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Each State and Federally-enforceable condition of the Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit (if any)
CO-R21-97-41	October 20, 1997	June 14, 2006 letter from J. L. Blatt November 14, 2011 letter from T. J. London
CO-R27-99-14-A(92)	March 31, 1999	November 14, 2011 letter from T. J. London July 23, 2012 email from Freddie Sizemore
R13-0171E	January 30, 2012	Only provisions that apply to Flare A221 apply to Polyox

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table," which may be downloaded from DAQ's website.

Determinations and Justifications

The following changes have been made to the Permit since its renewal in 2012:

- 1) Renumbered the Group ID from "5 of 5" to "5 of 8" throughout the permit.
- 2) Renamed "Institute Plant" to "Institute Facility" throughout the Permit.
- 3) Corrected UTM coordinates.
- 4) Updated the contact information in Conditions 3.5.3, 3.5.5, and 3.5.6.
- 5) Updated the Equipment Table in Section 1.1 as follows:

Most of CELLOSIZETM equipment is idle, as this plant has permanently shut down. These units have been removed from the equipment table.

POLYOX® Tank 4904 was rebuilt, which accounts for the change in year installed from 2004 to 2016.

Tank 4992 has been identified as "idle".

Tank 4998 is vented to the flare, A221, so the emission point ID has changed.

Rack TCR871 is no longer operated by Bayer, therefore that note is stricken.

Vessel 518R is idle and has been removed from service although it remains in the field, therefore the emission point is deleted.

The emission point for emission unit E504 has been changed to "No Vent".

Removed control device ID J230 from emission unit L6DB because the control device ID is E-707.

The control device for emission unit E535 has been changed to "None".

Combined the two emission points for Hopper 2 into one line item.

Removed Emission Points 230BB and 230CC as these are not vents to the atmosphere.

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- Removed emission unit ID B230 from Packed Bed Scrubber, since it is the control device and added B230 to its description.
- Removed emission unit ID GG230 and J230 from the baghouses, since they are the control devices.
- 6) Specified that refrigerant R134a is not subject to 40CFR82, Subpart F in Condition 3.1.7.
 - 7) Removed R13-0171 citations from Condition 3.4.1 as these conditions refer to the permanently shut down CELLOSIZETM process.
 - 8) Removed some language from Condition 3.7.2.a involving CELLOSIZETM HEC Plant equipment, as that equipment is idle.
 - 9) Corrected the year in Condition 3.7.2.b from "1994" to "1984".
 - 10) Changed Section 4.0 "CELLOSIZETM HEC" to Reserved as this plant has permanently shutdown.
 - 11) Process Vent 518 has been removed from Conditions 5.1.1 and 5.2.1 because it is idle.
 - 12) Condition 5.1.6, which referred to the CELLOSIZETM HEC Plant which is shutdown has been changed to "Reserved."
 - 13) In Condition 5.1.14, Emission sources 518R, V518, and Flare Header Vent (230CC) which are inactive have been removed. References to "CELLOSIZETM HEC" have been removed.
 - 14) The requirements for the A221 Flare from previous Conditions 4.1.14 through 4.1.19, 4.1.28, 4.1.29 have been added as Conditions 5.1.15 through 5.1.22, except that ethylene glycol, glycol ethers, and isophorone emission limits were not included in Condition 5.1.15 because they were from CELLOSIZETM HEC only.
 - 15) Condition 5.2.3, which referred to the CELLOSIZETM HEC Plant which is shutdown has been removed.
 - 16) The requirements for the A221 Flare from previous Conditions 4.2.3 through 4.2.5 have been added to Conditions 5.2.3 through 5.2.5.
 - 17) Condition 5.3.2, which referred to the CELLOSIZETM HEC Plant which is shutdown has been replaced with the A221 Flare requirements from previous Condition 4.3.1.
 - 18) References to idle Vessel 518 have been removed from Conditions 5.4.1, 5.4.2, and 5.5.3.
 - 19) References to the Vacuum System E535 have been changed to control device A221 in Conditions 5.4.7 and 5.4.8. A citation for R13-0171 Conditions 5.4.2 and 5.4.3 has been added to Conditions 5.4.7 and 5.4.8, respectively.
 - 20) Condition 5.4.10, which referred to the CELLOSIZETM HEC Plant which is shutdown has been changed to "Reserved."
 - 21) The reference to flare header vent 230CC, which has been shut down, has been removed from Condition 5.4.12.
 - 22) Previous Condition 4.4.5 has been moved to Condition 5.4.15.
 - 23) References to "CELLOSIZETM HEC" has been removed from Attachment A. The Flare Vent Header 230CC have been removed.
 - 24) Added 40CFR§63.1433(a) to Condition 5.1.4.
 - 25) Removed Condition 5.1.4.1(c) as the SSM plan is not applicable. Table 1 of 40CFR63, Subpart PPP specifically lists 40CFR§63.6(e)(3) as not being applicable. As a result Condition 5.4.5 has been changed to "Reserved" and Condition 5.5.2 has been revised.
 - 26) Some of the 40CFR63, Subpart PPP requirements were revised since the issuance of the last renewal. 40CFR§63.1422(d)(6) states that, for existing affected sources, the new pressure relief device monitoring requirements shall be met by March 27, 2017. The Permit has been changed to incorporate those changes as follows:
 - a) The citations and requirements in Conditions 5.1.5 and 5.3.1 have been updated.
 - b) Table 2 of 40CFR63, Subpart PPP states that Subpart G (40CFR§63.148 and 149) applies with the differences noted in 63.1433(a)(1) through 63.1433(a)(19). The citations in Condition 5.4.3 have been revised accordingly.
 - c) The citation and references for Conditions 5.4.6 and 5.5.5 have been updated.

Non-Applicability Determinations

The following requirements have been determined not to be applicable to the subject facility due to the following:

None

Request for Variances or Alternatives

None

Insignificant Activities

Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period

Beginning Date: November 3, 2017
Ending Date: December 4, 2017

Point of Contact

All written comments should be addressed to the following individual and office:

Mike Egnor
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: 304/926-0499 ext. 1208 • Fax: 304/926-0478
michael.egnor@wv.gov

Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Response to Comments (Statement of Basis)

On November 10, 2017 Jay Fedczak of DOW stated that Item 26 of the fact sheet erroneously referred to the compliance date and citation for a new affected source for 40CFR63, Subpart PPP. The language has been corrected as follows:

Some of the 40CFR63, Subpart PPP requirements were revised since the issuance of the last renewal. 40CFR§63.1422(d)(6) (b) states that for existing affected sources, the new pressure relief device monitoring requirements shall be met by March 27, 2017 ~~March 27, 2014~~. The Permit has been changed to incorporate those changes as follows:

On November 13, 2017, Jay Fedczak provided the following comment:

Just recently, a change was made to the process that eliminated emission point 230HH. New molecular sieves were installed and, instead of having a vent to the atmosphere, are now routed back into the process for recovery. As such, the emission unit labeled V412E/W, vented through emission point ID 230HH should be eliminated from the Emission Unit table (near bottom of page 3). Also, the row that has the limit in the table under 5.1.14 for V412E/W may be removed along with the reference to 230HH in 5.4.12.

Emission Unit V412E/W has been removed from the equipment table. The unit has been removed from Condition 5.1.14. The reference to Emission Point 230HH has been removed from Condition 5.4.12.

On November 16, Jay Fedczak provided comments that resulted in the following changes:

- 1) In item 19 in this fact sheet, the word “scrubber” has been removed. Control device A221 is a flare, not a scrubber.

- 2) The control device for the Blending unit E504 has been changed from "Filter E504" to "None". The emission point no longer exists at the facility and now vents through Conveyor #2 (E531). The emission point ID for E504 has been changed from "No vent" to "230L".
- 3) As the emission point listed for the Blending unit (230P) no longer exists, references to 230P has been removed from Conditions 5.1.7, 5.1.8, 5.1.9, 5.4.7, 5.4.8, and 5.4.11.
- 4) In Condition 5.1.14, the Emission Point for the E504 Blender has been changed to Conveyor #2 (230L). The Emissions Source ID for the baghouse has been changed from "J230" to "E707".
- 5) In Conditions 5.4.7 and 5.4.8, The Emission Point ID has been changed to the Control Device ID. This resulted in changing "GG230" to "E221A" and "J230" to "E707". References to Control Device E504 have been removed from these Conditions as the Control Device and Emission Point no longer exist.