

Fact Sheet



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

Permit Number: **R30-03900005-2022**

Application Received: **May 5, 2021**

Plant Identification Number: **03900005**

Permittee: **Union Carbide Corporation**

Facility Name: **Institute Facility**

Business Unit: **Catalyst Plant (Group 1 of 2)**

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 is located about ½ mile west on Route 25.

Facility Description

Group 1 of 2 includes the Catalyst Plant.

The Catalyst Plant manufactures catalysts for use in the production of ethylene oxide and ethylene glycol. Raw materials are delivered to the plant in containers and tank trucks; and then stored in tanks. These process materials are combined and then sent to a reactor. The processing materials are recovered and the product is sent to storage. The product is shipped in containers. Heat for the process operations is provided by a natural gas heater (F-306).

Emissions Summary

Emissions Summary [Tons per Year]		
Regulated Pollutants	Catalyst Plant Potential Emissions	2020 Facility-Wide Actual Emissions
Carbon Monoxide (CO)	1.66	5.59
Nitrogen Oxides (NO _x)	38.00	3.96
Particulate Matter (PM _{2.5})	6.26	0.39
Particulate Matter (PM ₁₀)	6.26	0.39
Total Particulate Matter (TSP)	6.26	0.44
Sulfur Dioxide (SO ₂)	1.20	0.01
Volatile Organic Compounds (VOC)	21.38	4.76

PM₁₀ is a component of TSP.

Hazardous Air Pollutants	Catalyst Plant Potential Emissions	2020 Facility-Wide Actual Emissions
Total HAPs	2.00	0.60
Ethylene Glycol	<1	0.12

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

Title V Program Applicability Basis

Based on the potential to emit from the Title V renewal applications for the Institute Plant's (1 of 2) and (2 of 2) combined, UCC does not have a potential to emit any criteria pollutant over 100 tons per year, any single HAP over 10 tons per year, or any combination of HAPs over 25 tons per year. The source will remain a Title V source on the basis of once in always in until such time the permittee requests review for removal from the Title V program and approval is granted by the Secretary. The facility remains subject to 40 CFR 63 Subpart PPP (Polyether Polyols MACT) and 40 CFR 63 Subpart DDDDD (Boiler MACT).

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:	45CSR2	Control of particulate matter from indirect heat exchangers.
	45CSR4	Control of objectionable odor
	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 DDDDD	Boilers and Process Heaters MACT
	40 C.F.R. 64	Compliance Assurance Monitoring (CAM)
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances
State Only:	45CSR4	No objectionable odors.
	45CSR§§21-37 and 40	Control of VOC Emissions

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)
R13-1991C	July 27, 2017	
CO-R21-97-41	October 20, 1997	June 14, 2006 letter from J. L. Blatt

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

Miscellaneous:

The facility name has been changed from “Catalyst Plant (Group 1 of 8)” to “Catalyst Plant (Group 1 of 2)”.

In Section 1.0 Emission Units Table, Emission Unit ID J070 Emission Unit Description was changed to ‘Wet Catalyst Feed Hopper’.

In Section 1.0 Emission Units Table, Emission Unit ID S075 with description T-253 Scrubber was deleted from the table.

In Section 1.0 Emission Units Table, Emission Unit ID K-1003 with description Chiller System was deleted from the table.

In Section 1.0 Emission Units Table, Emission Unit ID V-2000 with description Chiller System was added to the table.

Section 3.5.3 reporting sections was updated.

In Section 4.5.4. the ending date of the reporting period was corrected from December 31, 2021 to December 31, 2020.

Non-Applicability Determinations

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

40 C.F.R. 63, Subpart EEEE – “National Emission Standards for Hazardous Air Pollutants: Organic Liquid Distribution (Non-Gasoline).” Tank T-1004 is used to store an organic liquid containing HAPs, but is exempt from the control requirements because the liquid vapor pressure is less than 0.1 psia.

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: February 18, 2022

Ending Date: March 21, 2022

Point of Contact

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

Jonathan Carney
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: 304/926-0499 ext. 41247
jonathan.w.carney@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)

Describe response to comments that are received and/or document any changes to the final permit from the draft/proposed permit.

The following comments were received from Mr. Jay Fedczak EH&S Delivery Manager, Union Carbide Corporation:

Union Carbide Corporation (UCC) provides the following comments regarding the subject draft/proposed permit and fact sheet.

- 1. The Draft/Proposed Fact Sheet, under Title V Program Applicability Basis, states the facility-wide potential to emit is 100 tons per year of criteria pollutant, over 10 tons per year of a single HAP, and over 25 tons per year of aggregate HAPs. This is not a factual statement, as UCC operations at the Institute site have less than any of those amounts. This is primarily due to sale of most of UCC assets to Altvia in late 2019.*

WVDEP changed this part of the fact sheet by removing potential to emit as the basis for the source being subject to the Title V program. Based on the potential to emit from the Title V renewal applications for the Institute Plant's (1 of 2) and (2 of 2) combined, UCC does not have a potential to emit any criteria pollutant over 100 tons per year, any single HAP over 10 tons per year, or any combination of HAPs over 25 tons per year. The source will remain a Title V source on the basis of once in always in until such time the permittee requests review for removal from the Title V program and approval is granted by the Secretary. The facility remains subject to 40 CFR 63 Subpart PPP (Polyether Polyols MACT) and 40 CFR 63 Subpart DDDDD (Boiler MACT).

- 2. Please revise the phone number on Page 1 of 32 of the draft/proposed permit to (304) 747-0001.*

WVDEP changed the telephone number as an administrative change.

- 3. UCC requests that DAQ identify which emission point is to be tested, within the revised requirement 4.3.4. I believe the intent is to test emission reduction system H070.*

WVDEP agreed that condition 4.3.4 requires the clarification requested in this comment and has changed requirement 4.3.4 to the following:

- 4.3.4. To determine compliance with the mass emission limits for volatile organic compounds set forth in 4.1.1, the permittee shall conduct tests in accordance with 40 C.F.R. 60, Appendix A, Method 18 and/or 25A – “Determination of Total Gaseous Nonmethane Organic Emissions as Carbon,” upon the request of the Director of the Division of Air Quality. Once per permit term, the permittee shall conduct tests on emission reduction system, H070, to determine compliance with the H070 emission limits for volatile organic compounds set forth in 4.1.1. During the tests on H070, the catalytic oxidation bed outlet gas temperature shall be monitored to demonstrate that the catalytic oxidation bed outlet gas temperature is an appropriate indicator that can be used to reasonably assure compliance with the volatile organic compound emission limit of section 4.1.1. and VOC destruction efficiency of the control device. The temperature shall be measured using the same monitoring device and at the same location as specified in condition 4.2.2. If the results of the testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall comply with the requirements specified under 4.2.7. [45CSR13, R13-1991, 4.3.4; 45CSR§30-5.1.c]*

The underlined portion in 4.3.4 shown above includes the general requirement that the permittee shall test upon the request of the Director. This had been deleted, but given there are other emission points with VOC limits in 4.1.1, the Director has the authority to request testing of these other emission points. The second part of the underline portion starts the specific requirement that the permittee test H070.

The following comments were received from Justin Leary, Permit Specialist, US EPA Region III:

1. *The EPA requested that Section b. be removed from the Fact Sheet considering there are still some emission units subject to CAM.*

Non-Applicability Determinations

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

- a. **40 C.F.R. 63, Subpart EEEE – “National Emission Standards for Hazardous Air Pollutants: Organic Liquid Distribution (Non-Gasoline).”** Tank T-1004 is used to store an organic liquid containing HAPs, but is exempt from the control requirements because the liquid vapor pressure is less than 0.1 psia.

~~**b. 40CFR64 Compliance Assurance Monitoring (CAM)**~~

~~There has not been the addition of any pollutant specific emission units that have potential pre-control device emissions of a regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.~~

Section b. of the Non-Applicability Determinations section has been removed.

2. *EPA recommends that WVDEP require Union Carbide to perform compliance or performance testing for VOCs to verify compliance with the VOC emission limit and the VOC control efficiency requirement. As part of the testing program, monitoring of the outlet exhaust temperature from the catalytic oxidation bed should be performed to demonstrate that the catalytic oxidation exhaust gas temperature is an appropriate indicator that can be used to reasonably assure compliance with the VOC emission limit and the VOC destruction efficiency. EPA further suggests a minimum of VOC emissions stack testing once per permit term to ensure the catalyst is working at the required efficiency to meet the emission limit.*

Section 4.3.4. has been changed as follows to include once per permit term VOC tests for H070.

- 4.3.4. To determine compliance with the mass emission limits for volatile organic compounds set forth in 4.1.1, the permittee shall conduct tests in accordance with 40 C.F.R. 60, Appendix A, Method 18 and/or 25A – “Determination of Total Gaseous Nonmethane Organic Emissions as Carbon,” upon the request of the Director of the Division of Air Quality. Once per permit term, the permittee shall conduct tests on emission reduction system, H070, to determine compliance with the H070 emission limits for volatile organic compounds set forth in 4.1.1. During the tests on H070, the catalytic oxidation bed outlet gas temperature shall be monitored to demonstrate that the catalytic oxidation bed outlet gas temperature is an appropriate indicator that can be used to reasonably assure compliance with the volatile organic compound emission limit of section 4.1.1. and VOC destruction efficiency of the control device. The temperature shall be measured using the same monitoring device and at the same location as specified in condition 4.2.2. If the results of the testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall comply with the requirements specified under 4.2.7. [45CSR13, R13-1991, 4.3.4; 45CSR§30-5.1.c]