

# Fact Sheet



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

Permit Number: **R30-03900005-2006**  
Title V Application Received: **October 7, 1996**  
Plant Identification Number: **03900005**  
Permittee: **Union Carbide Corporation**  
Facility Name: **Institute Plant**  
Business Unit: **Glutaraldehyde (Group 4 of 5)**  
Mailing Address: **P. O. Box 8361, South Charleston, WV 25303**

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Physical Location: Institute, Kanawha County, West Virginia  
UTM Coordinates: 432.00 km Easting • 4,284.31 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.

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## Facility Description

Union Carbide Corporation has divided their Title V Application into the following five separate business units for which each will receive a Title V Permit:

Group	Process Units
1 of 5	EO Catalyst/Glycol Recovery
2 of 5	Acetone Derivatives/TONE <sup>®</sup> Polyol
3 of 5	Logistics
4 of 5	Glutaraldehyde
5 of 5	Water Soluble Polymers

Group 4 of 5 is the Glutaraldehyde Process Unit. Glutaraldehyde is produced by a reaction of methoxydihydropyran (MDP) with water in a reaction system. The reaction system effluent is pressured to a recovery system where glutaraldehyde is separated from methanol, a co-product of the reaction. Methanol and glutaraldehyde are recovered from the refining system. The glutaraldehyde is processed into different grades in blend tanks. Various grades of glutaraldehyde are shipped via tank truck, tote tanks, drums, and other small containers.

**Emissions Summary**

<b>Glutaraldehyde (Group 4 of 5) Emissions Summary [Tons per Year]</b>		
<b>Criteria Pollutants</b>	<b>Potential Emissions</b>	<b>2004 Actual Emissions</b>
Carbon Monoxide (CO)	1.0	0.8
Nitrogen Oxides (NO <sub>x</sub> )	0.20	0.15
Particulate Matter (PM <sub>10</sub> )	0.01	Negligible
Total Particulate Matter (TSP)	0.01	Negligible
Sulfur Dioxide (SO <sub>2</sub> )	0.01	Negligible
Volatile Organic Compounds (VOC)	15.0	10.7

*PM<sub>10</sub> is a component of TSP.*

<b>Hazardous Air Pollutants</b>	<b>Potential Emissions</b>	<b>2004 Actual Emissions</b>
Methanol	5.0	2.2

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

**Title V Program Applicability Basis**

Due to the facility-wide potential to emit over 100 tons per year of criteria pollutants, over 10 tons per year of an individual HAP, and over 25 tons per year aggregate HAPs, Union Carbide Corporation’s Institute Plant 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.

Group 4 of 5 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.
	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 Pursuant to 40 C.F.R. Part 63.
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. Part 63, Subparts F, G, H	Hazardous Organic NESHAP (HON)
	40 C.F.R. Part 82, Subpart F	Ozone depleting substances
	State Only:	45CSR4
	45CSR§§21-37 and 40	Control of VOC Emissions

Each State and Federally-enforceable condition of the draft Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the draft Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the draft 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, 45CSR15, 45CSR34 and 45CSR30.

### Active Permits/Consent Orders for Group 4 of 5

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit ( <i>if any</i> )
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 B," which may be downloaded from DAQ's website.

### Determinations and Justifications

#### 40 C.F.R. 63, Subparts F, G, and H (HON) Requirements

##### *Group 1 Process Vents*

Emission Unit V29 is a Group 1 process vent and is required by 4.1.1 to reduce emissions of organic HAP using a flare. Emissions from this source are routed to Flare A163 (emission point 163A).

To demonstrate compliance with 4.1.1, 4.2.1 requires installation of a device to continuously detect the presence of a pilot flame. In addition, 40 C.F.R. §63.116(a) required a performance test to be conducted on the flare. This test was conducted on September 4, 1997 and the results were submitted as part of the Notification of Compliance Status dated September 19, 1997.

The data submitted as part of the Notification of Compliance status is required to be maintained in accordance with 4.4.2. If any subsequent performance tests are conducted after submittal of the Notification of Compliance Status, 4.5.4 requires the data specified in 4.4.2 to be reported in the next Periodic Report.

Ongoing recordkeeping and reporting to demonstrate compliance with 4.1.1 is provided in 4.4.1 and 4.5.5. 4.4.1 requires the permittee to maintain hourly records of whether the monitor was continuously operating and whether the pilot flame was continuously present during each hour, and records of the times and durations of all periods during which all pilot flames are absent or the monitor is not operating. The records specified in 4.4.1 are required to be submitted as part of the Periodic Reports specified under 4.5.5.

##### *Group 2 Process Vents*

B170 is a Group 2 process vent with a TRE index value greater than 4.0. Section 4.4.3 requires the permittee to maintain records of the measurements, engineering assessments, and calculations performed to determine the TRE index value of the vent stream, submitted as part of the Notification of Compliance Status report dated September 19, 1997. If there are any process changes or recalculation of the TRE index value, the permittee is required to maintain records in accordance with 4.4.4 and to submit reports as specified in 4.5.6 or 4.5.7. A report is not required if the conditions in 4.5.8 are met.

The No. 1 Batch Still Vent was listed in the Notification of Compliance Status report as a Group 2 Process Vent. This source is permanently out of service and requirements for it were not included.

#### *Storage Vessels*

The following are Group 2 storage vessels: T3120, T3126, T3142, T3143, and T3144. For each Group 2 storage vessel, the permittee is required by 4.4.5 to maintain records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel.

Tanks T3125 and T3131 are out of service and were not included in the listing of Group 2 storage vessels in the permit. Tanks T3107, T3116, T4210, T4212, T4241, T4242, T4243, and T4244 were listed as Group 2 storage vessels in the original Notification of Compliance Status Report dated September 19, 1997, but are no longer in HON service and were not included in the listing of Group 2 storage vessels. A revised Notice of Compliance Status Report stating that these tanks are no longer HON Group 2 storage vessels was submitted on July 25, 2006.

There are no Group 1 storage vessels in the Glutaraldehyde Plant.

#### *Group 1 Transfer Operations*

LT5C – Spot #5 is a Group 1 transfer operation and is required by 4.1.4.1 to be equipped with a vapor collection system and control device. The control device used to control emissions from LT5C – Spot #5 is Flare A163 (emission point 163A). Additional requirements for the transfer racks and railcars are provided in 4.1.4.2 through 4.1.4.5.

To demonstrate compliance with 4.1.4.1, 4.2.2 requires installation of a device to continuously detect the presence of a pilot flame.

The data submitted as part of the Notification of Compliance status is required to be maintained in accordance with 4.4.6. If any subsequent performance tests are conducted after submittal of the Notification of Compliance Status, 4.5.9 requires the data specified in 4.4.6 to be reported in the next Periodic Report. The permittee is also required to maintain a record describing in detail the vent system used to vent each affected transfer vent stream to a control device as specified in 4.4.7.

Ongoing recordkeeping and reporting to demonstrate compliance with 4.1.4 is provided in 4.4.8, 4.4.9, 4.4.10, and 4.5.10. 4.4.8 requires the permittee to maintain hourly records of whether the monitor was continuously operating and whether the pilot flame was continuously present during each hour, and records of the times and durations of all periods during which all pilot flames are absent or the monitor is not operating. The records specified in 4.4.8 are required to be submitted as part of the Periodic Reports specified under 4.5.10. 4.4.10 requires the permittee to record, update annually, and maintain the following: 1) an analysis demonstrating the design and actual annual throughput of the transfer rack; 2) an analysis documenting the weight-percent organic HAP's in the liquid loaded; and 3) an analysis documenting the annual rack weighted average HAP partial pressure of the transfer rack. The permittee is required by 4.4.9 to record that the verification of DOT tank certification or Method 27 testing, required in 4.1.4.2, has been performed.

#### *Group 2 Transfer Operations*

There are no Group 2 Transfer Operations in the Glutaraldehyde Plant. L6TT was listed as a Group 2 transfer operation in the original Notification of Compliance Status report dated September 19, 1997. According to the revised Notification of Compliance Status Report dated July 25, 2006, this transfer operation is no longer a Group 2 source because it no longer loads HON MACT material.

#### *Process Wastewater*

There are no Group 1 or Group 2 process wastewater streams generated by the Glutaraldehyde Plant.

### *Heat Exchange System*

Since the heat exchanger systems in Glutaraldehyde meet the conditions of either 40 C.F.R. §§63.104(a)(1) {operated with the minimum pressure on the cooling water side at least 35 kilopascals greater than the maximum pressure on the process side}, 63.104(a)(4) {the once-through heat exchange system is subject to an NPDES permit}, or 63.104(a)(5) {the recirculating heat exchange system is used to cool process fluids that contain less than 5 percent by weight of total hazardous air pollutants listed in table 4 of 40 C.F.R. 63, Subpart G}, 40 C.F.R. §63.104(a) does not require any additional monitoring, recordkeeping, or reporting to be conducted.

### *Maintenance Wastewater*

For maintenance wastewaters containing organic HAP's listed in table 9 of 40 C.F.R. 63, Subpart G, the permittee is required to comply with the requirements of 4.1.5 and 4.4.11 by preparing a description of maintenance procedures and implementing them as part of the start-up, shutdown, and malfunction plan required under 40 C.F.R. §63.6(e)(3).

### *Equipment Leaks*

Union Carbide Corporation's Institute Plant is subject to the equipment leak provisions of 40 C.F.R. 63, Subpart H – “National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks.” Equipment components in Group 4 of 5 are subject to 40 C.F.R. §§63.162 (Standards: General), 63.163 (Standards: Pumps in light liquid service), 63.168 (Standards: Valves in gas/vapor service and in light liquid service), 63.169 (Standards: Pumps, valves, connectors, and agitators in heavy liquid service; instrumentation systems; and pressure relief devices in liquid service), and 63.171 (Standards: Delay of repair). Testing, recordkeeping, and reporting requirements to demonstrate compliance with the applicable leak standards specified in 4.1.6 are provided in 4.3.1 (40 C.F.R. §63.180 – Test methods and procedures), 4.4.12 (40 C.F.R. §63.181 – Recordkeeping requirements), and 4.5.11 (40 C.F.R. §63.182 – Reporting requirements).

### 45CSR6 Requirements

The permittee is required to comply with the hourly particulate matter emission limits of 45CSR§6-4.1 for flare A163. Based on the incinerator capacity, the limit for this flare is 0.13 lbs/hr. To demonstrate compliance with the hourly particulate matter emission limits, 4.3.4 requires the permittee to conduct 40 C.F.R. 60, Appendix A, Method 5 stack tests at the request of the Director. Since this flare is also subject to the requirements of 40 C.F.R. 63, Subpart G, no additional monitoring, testing, recordkeeping, or reporting was added.

45CSR§6-4.3 limits the opacity from flare A163 to less than twenty (20%) percent. In order to demonstrate compliance with this limit, the permittee is required by 4.2.3 to conduct monthly visual emissions monitoring and to maintain records in accordance with 4.4.14.

### 45CSR7 Requirements

Tanks T2073, T2074, T2075, T2076, T2077, T4222, T4223, and T42223 are required by 4.1.12 (45CSR§7-3.1) to be maintained at or below twenty percent opacity. Since liquid solutions of phosphoric acid are colorless, no visible emission are anticipated so visible emission monitoring was not required.

4.1.14 (45CSR§7-5.1) requires emission sources to be equipped with a system which may include, but not be limited to, process equipment design, control equipment design, or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. Small amounts of granular particulate matter is used as a processing aid. This material is dumped from bags into a dissolving vessel. Due to the small amount of particulate matter handled and the method of handling, fugitive particulate emissions are not expected and no monitoring or recordkeeping was added to demonstrate compliance.

In order to demonstrate compliance with the requirements of 4.1.15 (45CSR§7-5.2), fugitive emissions from plant premises under the operating control of UCC are minimized through paving and/or gravel.

### 45CSR21 Requirements

The permittee is subject to the state-enforceable only emission limitation requirements from 45CSR§21-40 and Consent Order CO-R21-97-41 provided in 4.1.7 and the state-enforceable only leak detection and repair (LDAR) requirements from 45CSR§21-37 and Consent Order CO-R21-97-41 provided in 4.1.8, 4.3.3, 4.4.13, and 4.5.12. The specific hourly, daily, and annual emission limits from Consent Order CO-R21-97-41 for the Glutaraldehyde Plant are provided in Appendix A, Attachment A of the permit.

### **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. 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. Because Tank 1501 has a capacity greater than 151 m<sup>3</sup> storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kpa), 40 C.F.R. §60.110b(b) exempts it from the requirements of 40 C.F.R. 60, Subpart Kb.
- b. 45CSR§7-4.2 – Because the potential emissions of phosphoric acid from Tanks T2073, T2074, T2075, T2076, T2077, T4222, T4223, and T42223 are less than 0.1 lbs/hr per source and the aggregate for all sources is less than 100 pounds per year, 45CSR§7-10.6 exempts these tanks from the phosphoric acid concentration limits of 45CSR§7-4.2.

### **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: August 15, 2006  
Ending Date: September 14, 2006

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

Carrie McCumbers  
Title V Permit Writer  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

### **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.

**Point of Contact**

Carrie McCumbers  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone: 304/926-0499 ext. 1226 • Fax: 304/926-0478

**Response to Comments (Statement of Basis)**

No comments were received.