

Fact Sheet



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

Permit Number: **R30-03900005-2017**
Application Received: **July 8, 2016**
Plant Identification Number: **03900005**
Permittee: **Union Carbide Corporation**
Facility Name: **Institute Facility**
Business Unit: **Acetone Derivatives Plant (Group 2 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 is located about ½ mile west on Route 25.

Facility Description

The Acetone Derivatives Plant converts isopropanol and/or acetone to produce various ketones and alcohols that are used in a wide range of applications including hair spray, nail polish remover, lacquer thinner, sinus tablets, and coatings used in the automobile industry.

Emissions Summary

Acetone Derivatives Plant (Group 2 of 8) Emissions Summary [Tons per Year]		
Regulated Pollutants	Potential Emissions	2015 Actual Emissions
Carbon Monoxide (CO)	17.7	3.60
Nitrogen Oxides (NO _x)	21.0	4.28
Particulate Matter (PM _{2.5})	1.3	0.32

Acetone Derivatives Plant (Group 2 of 8) Emissions Summary [Tons per Year]

Regulated Pollutants	Potential Emissions	2015 Actual Emissions
Particulate Matter (PM ₁₀)	1.3	0.32
Total Particulate Matter (TSP)	1.3	0.32
Sulfur Dioxide (SO ₂)	0.13	0.03
Volatile Organic Compounds (VOC)	82.00	56.94

PM₁₀ is a component of TSP.

Hazardous Air Pollutants	Potential Emissions	2015 Actual Emissions
Benzene	0.01	0
Biphenyl	0.60	0.51
Ethylene Glycol	< 1.00	0.05
Isophorone	0.40	0.15
Methyl Isobutyl Ketone	28.06	22.69
Methanol	1.00	< 0.01
Toluene	0.01	0
Xylene	0.01	0
Total	< 31.09	< 23.41

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 pollutant, over 10 tons per year of a single HAP, and over 25 tons per year of aggregate HAPs, Union Carbide Corporation's Institute Facility 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:	45CSR2	Control of particulate matter from indirect heat exchangers.
	45CSR6	Open burning prohibited.
	45CSR10	Control of sulfur dioxide emissions.
	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.

	45CSR16	Emission Standards for New Stationary Sources pursuant to 40 C.F.R. 60.
	45CSR30	Operating permit requirement.
	45CSR34	Emission Standards for Hazardous Air Pollutants.
	40 C.F.R. 60, Subpart Kb	NSPS for Volatile Organic Liquid Storage Vessels.
	40 C.F.R. Part 61	Asbestos inspection and removal
	40 C.F.R. 63, Subparts F, G, H	Hazardous Organic NESHAP (HON)
	40 C.F.R. 63, Subpart FFFF	Miscellaneous Organic NESHAP (MON)
	40 C.F.R. 63, Subpart DDDDD	Boiler and Process Heater MACT
	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)
CO-R21-97-41	October 20, 1997	June 14, 2006 letter from J. L. Blatt October 7, 2011 letter from T. J. London

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 are changes/additions to the 2012 permit renewal for this facility:

1. Minor Modification MM01 (issued on October 28, 2014) – permanent removal of Tank 1234 and the return of Tank 1235 to service.
2. Off-permit change (October 16, 2014) – VOC storage tank T1212 was added in October, 2014. Estimated emissions from the Tank are 0.43 lb/hr and 0.2 tpy, therefore a 45CSR13 permit was not required. There are no applicable requirements in the permit for the Tank.
3. Emission Units Table 1.0 – status “currently idle” was added to some tanks, Tank 1212 was added (see item 2 above) and a “Control Devices” section was added for the existing control devices (V045 Vent Condenser, A030 Reactivation Scrubber and F040 TT/TC Scrubber). Also, Tank 1019 was removed because it was demolished in 2016, and the Tank 1236 status (“Planned for Decommissioning in

2014”) was updated to “Empty, cleaned, and isolated; waiting for demolition” to reflect current situation. References to “Powerhouse” were removed, since in 2011 the gas stream from the 201 Scrubber that was vented to the Powerhouse was re-routed to the Dowtherm Furnace (Emission Unit ID B032). Some typos were corrected – the 201 Scrubber installation year was changed from 1998 to 1942; the “East Rack Rail Car Loading – operated by Logistics” Emission Unit ID was changed from “TCL4” to “RCL4” and Emission Point ID was changed from “L4TC or 040F” to “L4RC to 040F”; for the Emission Units R201 through R209 a Control Device ID was changed from “030A” to “A030”.

4. Requirement 4.1.11 – the placeholder language for the 40 C.F.R. 63 Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*, was replaced with the requirements of this subpart (effective after the previous Title V renewal was issued) applicable to the existing process heater Dowtherm Furnace (B032) with heat input capacity greater than 10 MMBtu/hr burning natural gas and an other gas 1 fuel (*ADU Plant Absorber Off-Gas Containing H2 Fuel Stream*).

The following applicable sections were left out of the permit for the reasons listed below:

- a) §§63.7495 (b) and (d) – the existing process heater compliance date (no later than January 31, 2016) has passed and notification requirements were completed with submittal of the Notification of Compliance Status (NOCS) on March 16, 2016.
- b) §63.7510 (e) – completed; as per NOCS, initial tune-up of the process heater B032 by the procedures described in §63.7540(a)(10)(i) through (vi) and one-time energy assessment specified in Table 3 were completed before the compliance date specified in §63.7495 (January 31, 2016).
- c) §§63.7530 (e), (f) and (g) – completed; a signed certification that the energy assessment was completed according to Table 3 to this subpart was included with the NOCS; the NOCS contained the results of the initial compliance demonstration according to §63.7545(e); an initial fuel specification analysis according to §§63.7521(f) through (i) was completed per sampling on November 12, 2014 and the initial mercury constituents in the fuel were measured to be equal to or less than half of the mercury specification as defined in §63.7575, therefore it was demonstrated that the fuel qualified as an other gas 1 fuel, as defined in §63.7575, and per §63.7540 (c)(1) no further sampling is necessary (unless fuels will change).
- d) §63.7545(e) – completed; NOCS was submitted on March 16, 2016 (within 60 days of the compliance date specified at §63.7495(b)).

Applicable requirements of the section §§63.7521 (f), (g), (h) and (i) were completed for the *ADU Plant Absorber Off-Gas Containing H2 Fuel Stream* fuel:

- An initial fuel specification analyses for mercury according to the procedures in paragraphs §§63.7521 (g) through (i) and Table 6 (3) to the Subpart DDDDD were conducted, and mercury concentration was measured to demonstrate that the *ADU Plant Absorber Off-Gas Containing H2 Fuel Stream* qualifies as an other gas 1 fuel.
- “Site specific fuel analysis plan for other gas 1 fuels” as per §63.7521(g) was developed and submitted to EPA, and was approved in a letter from Diana Esher (US EPA Region III) on March 2, 2014).

However, these requirements were included with the permit in case the fuel is changed in the future.

Also, conditions 4.3.6, 4.4.11 and 4.5.11 were added to include applicable testing, recordkeeping and reporting requirements of the subpart. According to the §63.7555 (recordkeeping requirement 4.4.11), records “of the calculations and results of the fuel specification for mercury in Table 6” must be maintained monthly or at the frequency specified by §63.7540(c), but since the *ADU Plant*

Absorber Off-Gas Containing H2 Fuel Stream initial mercury content was measured to be equal to or less than half of the mercury specification as defined in §63.7575, and per §63.7540 (c)(1) no further sampling is necessary (unless fuels will change), so only one record of initial analysis needs to be maintained in this case. Also, per §63.7550(b)(5) (reporting requirement 4.5.11), the company may submit compliance reports at the same time as other periodic reports (such as Semi-Annual Monitoring reports).

5. Requirements 4.1.2 and 4.4.3 – references to Tanks 1019 and 1236 were removed since Tank 1019 was demolished, and Tank 1236 is awaiting demolition.

Non-Applicability Determinations

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

1. From the current TV permit:
 - a. 40 C.F.R. 63, Subpart EEEE – “National Emission Standards for Hazardous Air Pollutants: Organic Liquid Distribution (Non-Gasoline).” Tanks T032A and T032B are used to store Dowtherm and Dowtherm is transferred at the loading/unloading rack TTL032. Tank 1201 is used to transload isophorone. Tank 265 (T265) was installed to store process coolant (ethylene glycol/water mixture) for the Acetone Industrial Refrigeration System (FES). These emission units are not subject to the requirements of 40 C.F.R. 63, Subpart EEEE for storage tanks and transfer racks because the liquid vapor pressures of Dowtherm, isophorone, and the process coolant (ethylene glycol/water mixture) are less than 0.1 psia.
 - b. 40 C.F.R. 63, Subpart FFFF – “National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing.” While the batch process vents are subject to the MON MACT, there are no requirements from the rule that apply. The following sections of the rule are not applicable:
 - i. §63.2460 – Does not apply to the batch process vents from Still S251 (Emission Point ID No. 030K) and Reactor Reactivation wet scrubber vent (Emission Point ID No. 030A) since each emission point has pre-control HAP emissions that are less than 200 lb/yr.
 - ii. §63.2480 – Does not apply to the equipment components associated with Still S251 and Reactor reactivation because the total HAP concentration is less than 5% weight in the process streams.
 - iii. §63.2485 – Does not apply to the reactivation water scrubber (Equipment ID No. A030) wastewater because the wastewater’s annual average concentration of compounds in tables 8 and 9 to Subpart FFFF is less than 5 ppmw.
 - iv. §63.2490 – Does not apply to the heat exchangers S251TC and S251OC since these are once through cooling water systems, the discharge of which is subject to a NPDES permit.
 - c. 40 C.F.R. 63, Subpart G – “National Emission Standards for Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater.” The gas stream from the 201 Scrubber that is routed to the Dowtherm Furnace (Emission Unit ID B032) is not a process vent subject to the requirements of 40 C.F.R. 63, Subpart G because the gas stream is routed to a fuel gas system as defined in §63.101 and

according to 40 C.F.R. §63.107(h)(3), a gas stream going to a fuel gas system is not a process vent.

2. 40 C.F.R. 60 Subpart Kb – Tank T1212 vapor pressure is 0.03 psia @ 77° F, which is less than 0.5 psia, therefore the Tank is not subject to the requirements of this Subpart.

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: April 14, 2017
Ending Date: May 15, 2017

Point of Contact

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

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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 April 24, 2017 the DAQ received comments from Union Carbide Corporation by e-mail. As a result, the following changes were made to the Emission Units Table:

- Tanks 1006-1009 installation year was changed to 1942;
- Still 211 is not idle, but in service, therefore the phrase “(currently idle)” was removed; and
- Still 217 was replaced in 2011, therefore installation year was changed to 2011.