

# ADEQ OPERATING AIR PERMIT

Pursuant to the Regulations of the Arkansas Operating Air Permit Program, Regulation No. 26:

**Permit No. : 860-AOP-R10**

**Renewal #1**

**IS ISSUED TO:**

Ciba Specialty Chemicals Corporation  
West Memphis, AR 72301  
Crittenden County

AFIN: 18-00081

THIS PERMIT AUTHORIZES THE ABOVE REFERENCED PERMITTEE TO  
INSTALL, OPERATE, AND MAINTAIN THE EQUIPMENT AND EMISSION  
UNITS DESCRIBED IN THE PERMIT APPLICATION AND ON THE  
FOLLOWING PAGES. THIS PERMIT IS VALID BETWEEN:

January 4, 2006    AND    January 3, 2011

IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

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Mike Bates  
Chief, Air Division

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Date Modified

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**Table 1 - List of Acronyms**

A.C.A.	Arkansas Code Annotated
AFIN	ADEQ Facility Identification Number
CFR	Code of Federal Regulations
CO	Carbon Monoxide
HAP	Hazardous Air Pollutant
lb/hr	Pound per hour
MVAC	Motor Vehicle Air Conditioner
No.	Number
NO <sub>x</sub>	Nitrogen Oxide
PM	Particulate matter
PM <sub>10</sub>	Particulate matter smaller than ten microns
SNAP	Significant New Alternatives Program (SNAP)
SO <sub>2</sub>	Sulfur dioxide
SSM	Startup, Shutdown, and Malfunction Plan
Tpy	Ton per year
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
ng/J	Nanograms per Joule

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**Section I: FACILITY INFORMATION**

PERMITTEE: Ciba Specialty Chemicals Corporation

AFIN: 18-00081

PERMIT NUMBER: 860-AOP-R10

FACILITY ADDRESS: 100 Bridgeport Road Industrial Park  
West Memphis, AR 72301

MAILING ADDRESS Same as above

COUNTY: Crittenden

CONTACT POSITION: Jim Morse

TELEPHONE NUMBER: (870) 735-8750

REVIEWING ENGINEER: Paula Parker

UTM North - South (Y): 3891.17

UTM East - West (X): 764.46

Zone 15

## Section II: INTRODUCTION

Ciba Specialty Chemicals Corporation, located at 100 Bridgeport Road in West Memphis, AR, owns and operates a facility which manufactures intermediate synthetic organic chemicals used in water treatment applications. The intermediate chemicals produced at Ciba include crude glycidyl ethers and (meth)acrylic esters.

### Summary of Permit Activity

The facility has requested a minor modification to their current permit in order to incorporate the following changes:

- To recalculate epichlorohydrin emissions from the P1 Building, involving Reactors 104, 105, 106, 114, and 107;
- To allow for the production of biodiesel at Reactor 104;
- To increase plantwide HAP from FS-3A so that emissions reflect total annual operation; and
- To correct a citation error of Specific Condition 56.

The facility recalculated epichlorohydrin emissions from the P1 building, combining actual testing with a large safety factor. This has resulted in a drop in VOC at R-106 and R-114 of 1.2 tpy VOC. The production of biodiesel at R-104 would, alone, result in 2.2 tpy VOC and 1.1 tpy methanol. The increases at FS-3A are 0.01 tpy methanol, 0.03 tpy methyl methacrylate, and 0.01 tpy allyl chloride. Specific Condition 56 states that compliance shall be determined by Specific Condition 55. This is incorrect; the condition should reference Specific Condition 58.

Total Plantwide changes are reductions of epichlorohydrin by 1.95 tpy and increases to VOC, methanol, methyl methacrylate, and allyl chloride by 0.8, 1.06, 0.03, and 0.01 tpy, respectively.

### Regulations

The following table contains the regulations applicable to this permit.

**Table 2 – Regulations**

Source No.	Regulation
All Sources	Arkansas Air Pollution Code (Regulation 18) effective February 15, 1999

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Source No.	Regulation
All Sources	Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation 19) effective December 19, 2004
All Sources	Regulations of Arkansas Air Permit Operating Program (Regulation 26) effective September 26, 2002
P1, P2, P3, P4 Processes and FS-3	NESHAP Subpart FFFF. requires Initial Notification (submitted March 8, 2004) and compliance with Subpart FFFF before May 10, 2008.
SN-P3-2 SN-P3-3 SN-P3-12 SN-P4-2	NSPS Subpart Kb
SN-P3-4 SN-P3-6 SN-P4-5	NSPS Subpart Dc
SN-P3-4 SN-P3-6 SN-P4-5	NESHAP Subpart DDDDD. Section 63.7545 and Table 10 requires compliance with Subpart DDDDD before September 13, 2007. Initial notification is not required for these sources.
SN-P4-1	NSPS Subpart NNN
	NSPS Subpart RRR

Ciba is also classified as a major stationary source for VOC under the regulations of 40 CFR Part 52.21, *Prevention of Significant Deterioration of Air Quality* (PSD).



The following table contains cross-references to the pages containing specific conditions and emissions for each source. This table, in itself, is not an enforceable condition of the permit.

**Table 3 – Emission Summary**

EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
	Total Allowable Emissions	PM	10.0	4.7	N/A
		PM <sub>10</sub>	10.0	4.7	
		SO <sub>2</sub>	57.6	18.8	
		VOC	134.4	536.5	
		CO	41.6	42.9	
		NO <sub>x</sub>	140.8	69.7	
	HAPs	Acrylamide <sup>HAP</sup>	0.02	0.02	N/A
		Acrylic Acid <sup>HAP</sup>	0.31	0.61	
		Allyl Chloride <sup>HAP</sup>	4.15	18.25	
		Epichlorohydrin <sup>HAP</sup>	0.03	0.05	
		Ethyl Acrylate <sup>HAP</sup>	2.04	8.40	
		Methanol <sup>HAP</sup>	9.66	41.08	
		Methyl Methacrylate <sup>HAP</sup>	3.81	16.20	
		Methyl Chloride <sup>HAP</sup>	5.16	22.04	
	Air Contaminants**	Acetone	0.6	1.7	N/A

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EMISSION SUMMARY						
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page	
			lb/hr	tpy		
P1-1	Reactor 104	VOC Acrylamide <sup>HAP</sup> Epichlorohydrin <sup>HAP</sup> Methanol <sup>HAP</sup> Allyl Chloride <sup>HAP</sup>	0.01	*	19	
P1-2	Reactor 105				19	
P1-3	Reactor 106				19	
P1-4	Reactor 114				19	
P1-5	Tank Farm 500				0.03	20
P1-6	Tank Farm 300 - Removed				1.52	20
P1-7	Reactor 107				4.03	19
P1-8	Tank Farm 200					20
P1-9	Reactors 104, 105, and 107 for mDMDAC					19
P2-1	Reactor 101	VOC Acrylamide <sup>HAP</sup> Acrylic Acid <sup>HAP</sup> Ethyl Acrylate <sup>HAP</sup> Methanol <sup>HAP</sup> Methyl Methacrylate <sup>HAP</sup> Methyl Chloride <sup>HAP</sup>	.	*	25	
P2-2	Reactor 102				12.8	25
P2-3	Reactor 103				0.01	25
P2-4	Reactor 108				0.30	25
P2-5	Reactor 109				1.20	25
P2-6	Tank Farm 100				1.30	25
		0.70	25			
		2.60	26			

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
P3-1	Reactors 110, 112, 113, 115, 116	PM/PM <sub>10</sub> SO <sub>2</sub> VOC CO NO <sub>x</sub> Acetone Acrylic Acid <sup>HAP</sup> Ethyl Acrylate <sup>HAP</sup> Methanol <sup>HAP</sup> Methyl Methacrylate <sup>HAP</sup>	1.1 32.7 14.0 11.2 20.2 0.5 0.01 0.50 2.30 1.43	*	30
P3-2	Tank Farm 600				30
P3-3	Tank Farm 400				31
P3-4	Boiler #1				31
P3-6	Boiler #3				31
P3-7	Fire Emergency Pump				32
P3-8	500 Gallon Gasoline Tank				32
P3-9	500 Gallon Diesel Tank				32
P3-10	Wash Tanks				31
P3-11	Methanol Recovery				31
P3-12	Tank Farm 700				32
P3-13	Inhibitor Vats				32
P3-14	10,000 Gallon Diesel Tank - Removed				N/A
P3-15	10,000 Gallon Diesel Tank - Removed				N/A

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EMISSION SUMMARY																						
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page																	
			lb/hr	tpy																		
P4-1	P4 Cationic Monomer Reactors	PM/PM <sub>10</sub> SO <sub>2</sub> VOC CO NO <sub>x</sub> Methanol <sup>HAP</sup> Methyl Chloride <sup>HAP</sup>	0.5	17.0	41																	
P4-2	P4 Tank Farm					5.1	4.8	41														
P4-3	P4 Loading/Unloading								3.4	0.52	41											
P4-4	P4 Equipment Leaks											2.30	*	41								
P4-5	Boiler #4														41	41						
P4-6	25,000 Gallon Diesel Storage Tank																41	41				
P4-7	Quat Plant																		41	43		
P4-8	25,000 Gallon Diesel Storage Tank																				41	43

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
FS-1	Loading/Unloading (P1, P2, P3, P4)	VOC	2.3	10.0	53
		Acetone	0.1	0.2	
		Methanol <sup>HAP</sup>	0.80	3.60	
		Methyl Methacrylate <sup>HAP</sup>	0.22	1.00	
		Ethyl Acrylate <sup>HAP</sup>	0.34	1.50	
FS-2	Equipment Leaks (P1, P2, P3)	VOC	22.8	99.7	53
FS-3	Wastewater Fugitives	VOC	46.8	205.0	53
		Methyl Chloride <sup>HAP</sup>	0.26	1.14	
		Methanol <sup>HAP</sup>	2.74	12.00	
		Methyl Methacrylate <sup>HAP</sup>	1.30	5.68	
FS-3A	Wastewater Fugitives – New Treatment Plant	VOC	2.4	10.4	53
		Allyl Chloride <sup>HAP</sup>	0.12	0.53	
		Methanol <sup>HAP</sup>	0.48	2.11	
		Methyl Methacrylate <sup>HAP</sup>	0.16	0.71	
FS-4	Neutralization Tanks	VOC	0.1	0.1	53
		Methanol <sup>HAP</sup>	0.01	0.01	

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
MI-1	Lab Emergency Electrical Generator, 180 hp	PM <sub>10</sub>	0.4	0.1	56
		SO <sub>2</sub>	0.4	0.1	
		VOC	0.5	0.1	
		CO	1.3	0.2	
		NO <sub>x</sub>	5.6	0.6	
MI-2	Emergency Electrical Generator (by P-2), 1500 hp	PM <sub>10</sub>	3.3	0.2	56
		SO <sub>2</sub>	3.1	0.2	
		VOC	3.8	0.2	
		CO	10.1	0.6	
		NO <sub>x</sub>	46.5	2.4	
MI-3	Fire Protection Generator (WWTP/Instrumentation), 1500 hp	PM <sub>10</sub>	3.3	0.2	56
		SO <sub>2</sub>	3.1	0.2	
		VOC	3.8	0.2	
		CO	10.1	0.6	
		NO <sub>x</sub>	46.5	2.4	
MI-4	Electrical Generator (400 kW/600 Hp-P4)	PM <sub>10</sub>	1.4	0.1	56
		SO <sub>2</sub>	1.3	0.1	
		VOC	1.5	0.1	
		CO	4.1	0.3	
		NO <sub>x</sub>	18.6	1.0	

<sup>HAP</sup> Denotes a hazardous air pollutant included in VOC totals

\*Ton per year emission limit compliance to be based upon plantwide values.

\*\*Air Contaminants such as ammonia, acetone, and certain halogenated solvents are not VOCs or HAPs.

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### **Section III:PERMIT HISTORY**

- 860-A Initial permit issued on 03/26/90 which consolidated air permit issued to CPS Chemical, encompassing all existing sources.
- 860-AR-1 Permit issued on 04/28/92. This permit acknowledged the applicability of NSPS Subpart Kb in relation to tanks T-400 and T-401. Also the tank farm emissions were bubbled into a single source designation.
- 860-AR-2 A new reactor, R-107, into building P-1 was permitted and sources were organized into three main process areas, P-1, P-2, and P-3. Permit was issued on 08/12/96.
- 860-AOP-R0 Initial Title V permit assigned to the facility on 07/10/00. Due to the installation of two unpermitted sources, the facility was required to submit a PSD application. After reviewing the PSD application, the Department accepted the facility's proposal for BACT. The Department incorporated the proposed controls as a requirement of Operating Air Permit 860-AOP-R0. In requiring the control as a federally enforceable limit, the issuance of a PSD air permit was not required.

The applicability of major source status under PSD first became clear in early 1997, when the facility and its consultant performed a comprehensive re-analysis of existing emissions generated by the facility. During this inventory, it was discovered that existing but newly quantified fugitive emissions brought the VOC emission total to a level beyond 100 tons per year, the major source threshold for the chemical plant category under PSD.

At the time of Title V permit application submittal in March of 1998, the facility (then CPS Chemical) reported to the Department that two wash tanks (V1212 and V1213, SN-P3-10a) had been installed in 1991 without authorization. In addition to violating the terms of Air Permit 860-A, the facility stated that the combined potential emissions from these tanks may have exceeded the significant increase threshold for VOC under the regulations of PSD. The Department responded by issuing Consent Administrative Order LIS: 98-073. One of the Order's conditions required the facility to submit a historical PSD permit application. In September of 1998, the facility submitted the PSD application, which included an applicability review, a Best Available Control Technology (BACT) analysis, and an air quality analysis. After reviewing the PSD application, the Department accepted the facility's proposal for BACT: the installation of chilled vent condensers as control equipment for the wash tanks. Additionally, the Department approved the facility's plan to implement a leak detection and repair (LDAR) program for the P-3 plant, which houses the tanks. The condenser

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efficiency was estimated at 90% for VOC reduction, and the LDAR program at 95% for fugitive VOC.

The application of the chilled vent condenser systems to the wash tanks reduced their potential to emit from 58 to 5.8 tons per year, below the PSD significant increase threshold. The Department has incorporated this proposed control as a requirement of Operating Air Permit 860-AOP-R0. In requiring the control as a federally enforceable limit, the issuance of a PSD air permit was not required for the tanks.

In addition to the previously installed wash tanks, VOC increases from new process modifications were also examined for PSD applicability during the application review. The units in the P3 process contributed 14.1 ton/yr in VOC emissions, while the P4 process line resulted in a total of 38.3 ton/yr of VOC. Since the P3 and P4 processes were not related (they share no common equipment or materials, and neither process depends upon the other), their combined emission increases did not constitute a PSD review for this permitting action.

- 860-AOP-R1 This minor modification, issued 04/18/01, was concerned with the usage of two reactors, 106 and 114, in the P1 manufacturing section. In addition to their current use, they were allowed to produce DMDAC polymers in a similar fashion as in the P2 section.
- 860-AOP-R2 Three modifications were incorporated in this permit. One entailed additional service to the T-600 tank farm (SN-P3-2), involving an allowance for cyclohexane/methyl methacrylate processing at tanks T-606, T-620, T-623, and T-627. Secondly, Boiler #3 (SN- P3-6) was allowed to utilize by-product methanol as a fuel source under the EPA's guidelines for alternative fuels. Third, an emission limit for Reactor 108 (R-108) in source P2-4 was corrected. Permit was issued 09/18/01.
- 860-AOP-R3 The minor modification allowed the manufacture of additional water treatment chemicals in its P-3 process unit. Reactors in the P3-1 process unit were permitted for additional service. Five tanks were installed, two in the 600 Tank Farm (SN-P3-2) and three tanks in the 400 Tank Farm (SN-P3-3). Permit issued on 4/26/02.
- 860-AOP-R4 The permit was issued on 10/29/02. The minor modification affected sources P2-4 (Reactor 108), P3-1 (the P3 reactors), and P3-10a & b (Wash Tanks). Changes were made to the permit limits for these sources to more accurately reflect calculations for the trans-esterification process. Changes were also made at these sources to reflect an increase in sparge rates due to safety considerations, the main



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focus being to prevent an explosive atmosphere. A typographical correction was also made to include fugitive HAP emissions previously quantified for SN-FS-3 in the emission summary table and in Plantwide Condition 7.

- 860-AOP-R5 The permit was issued on 5/11/2004. The facility made the following changes to the permit: added a new product, TAAC (tetraallylammonium chloride), for the R-104 reactor (SN-P1-1); added isopropanol as a recovered solvent under R-110, 112, 113, 115, and 116 (SN-P3-1); revised the testing requirements for methanol by-product fuel at Boiler #3 (SN-P3-6); allowed an annual 4-hour testing and maintenance event at the Emergency Electrical Generator, Fire Protection Generator, and Electrical Generator (SN-P4-9, SN-P4-10, and SN-P4-11); added methanol rinsing allowances to the Wash Tanks (SN-P3-10); revised emission calculations for the Inhibitor Vats (SN-P3-13); revised emission calculations for loading at FS-1; added a 180 hp diesel-fired electrical emergency generator (SN-MI-1); and allowed combustion of an isopropanol by-product in Boiler #3. Additionally, the process descriptions for the P1 and P2 buildings were corrected, as well as several other typographical errors.
- 860-AOP-R6 The permit was issued on 11/18/2004. This modification authorized the facility to perform the following: to manufacture a new product, a terpolymer compound, in the R-102 and R-103 (SN-P2-2 and SN-P2-3) reactors; to manufacture NNDMA (N,N-dimethylacrylamide), in the R-108 reactor (SN-P2-4); to install a 20,000 gallon tank in the P4 unit; to replace the existing open neutralization basin with two closed tanks of approximately 5,000 gallons each (SN-FS-4); and to add methanol loading at FS-1 (which was previously removed), along with loading of methyl methacrylate, cyclohexane, heptane, and NNMDA.
- 860-AOP-R7 The permit modification incorporated the following changes to their permit: to revise allyl chloride emissions at Reactors 104, 105, and 107 for mDMDAC (SN-P1-9) on the basis of testing; to allow sampling at the start and at the end of venting operations of the scrubbers at Reactors 101 and 109 (SN-P2-1 and SN-P2-5); to allow manufacture of FA-1 in the R-108 reactor (SN-P2-4) and P3 reactors (SN-P3-1) using ethyl acrylate; to revise NO<sub>x</sub> emission estimates at Boiler #3 (SN-P3-6) for combustion of isopropanol or methanol fuels; to revise the sampling requirements of the P4 Cationic Monomer Reactors (SN-P4-1); to recalculate emission estimates of Tank Farm 100 (SN-P2-6), Tank Farm 600 (SN-P3-2) P4 Loading/Unloading (SN-P4-3), and Loading/Unloading P1, P2, P3 (SN-FS-1); and the addition of a new wastewater treatment plant (SN-FS-3A).
- 860-AOP-R8 This permit renewal encompassed the following changes: SN-P1-6 (Tank Farm 300) was removed; short term emissions from SN-P3-4 (Boiler #1), P3-6 (Boiler #3), and P4-5 (Boiler #4) were changed to reflect No. 2 fuel oil use during natural

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gas curtailment situations; annual emissions from SN-P3-4 (Boiler #1), P3-6 (Boiler #3), and P4-5 (Boiler #4) were recalculated with current AP-42 factors; FS-2 (Equipment Leaks for the P1, P2, and P3 Processes) were recalculated; CAM requirements have added for several sources; SN-P3-14 and P3-15 (10,000 gallon diesel tanks) were removed; NSPS Kb and NNN requirements have been updated; and the Emergency Electrical Generator (by P-2), Fire Protection Generator (WWTP/Instrumentation) and Electrical Generator (SN-P4-9, 10, and 11) have been renamed to SN-MI-2, MI-3, and MI-4 in the Miscellaneous Sources section. A period of 30-days of fuel oil usage during natural gas curtailment situations was added to the permit along with a commensurate increase in criteria pollutants. This change affected SN-P3-4, SN-P3-6, and SN-P4-5.

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## **Section IV: EMISSION UNIT INFORMATION**

### **P-1 Process Building**

#### **Source Description**

##### Crude mDMDAC Process

Reactors R-104, R-105, and R-107 for mDMDAC Service (SN-P1-9)

Crude dimethyl diallyl ammonium chloride (mDMDAC) is produced by reacting dimethylamine (DMA) with allyl chloride and sodium hydroxide. The initial charging step and subsequent reaction occur in a closed system. The reactors are not vented, and no emissions occur.

Following this reaction, the reactors contain the product mDMDAC in an aqueous phase, as well as a small organic phase consisting of unreacted allyl chloride and byproduct allyl alcohol. The units enter a vent down cycle, in which the unreacted contents of each reactor's vapor space are vented through the water/glycol condenser, and then through a new packed-column caustic (NaOH) scrubber to the atmosphere. Once the reactors are vented, a water strip and allyl alcohol strip are performed. Uncondensed organics from the strip processes are also routed through the condenser and caustic scrubber. When product specifications are achieved, the product is pumped to storage.

##### Polymer DMDAC Process

R-104 (SN-P1-1), R-105 (SN-P1-2), and R-107 (SN-P1-7)

DMDAC polymers are produced by reacting an aqueous solution of monomer dimethyl diallyl ammonium chloride (mDMDAC). The reactor is vented to the atmosphere during the entire process, which includes an initial charging step, reaction, and nitrogen sparge. Following sparging, the batch is diluted with water and adjusted to specification. Water vapors leave the unit and pass through a water-cooled condenser. Any volatile organics present are condensed in this unit and returned to the reaction vessel. Vapors that pass through this condenser vent to the atmosphere.

##### TAAC Process

R-104 (P1-1)

The crude TAAC is produced by reacting triallylamine (TAA) with allyl chloride. The unit is vented to a caustic scrubber during the vent down cycle following the reaction.

The crude aqueous product is cut to storage and fresh TAA is charged into the remaining unreacted raw materials, followed by feeding allyl chloride to complete the next batch. The process continues, charging on the remaining unreacted raw materials. After crude production is

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complete, the crude is charged back to the reactor where it is heated and stripped under vacuum with caustic addition. Once the product meets specifications, it is collected and transferred to storage.

#### DMDAC Polymer and Copolymer Process R-106 (P1-3) and R-114 (P1-4)

DMDAC copolymers are produced by reacting an aqueous solution of mDMDAC with aqueous acrylamide as a second monomer. Therefore, this reaction will produce the DMDAC-acrylamide copolymer.

DMDAC polymers are produced by reacting an aqueous solution of mDMDAC. This reaction produces a DMDAC homopolymer.

The reactor is vented to the atmosphere during the entire process, which includes an initial charging step, reaction, and nitrogen sparge. Following sparging, the batch is diluted with water and adjusted to specification.

#### Poly Epamine Process R-105 (SN-P1-2), R-106 (SN-P1-3), R-107 (SN-P1-7), and R-114 (SN-P1-4)

This process reacts dimethylamine (DMA) with epichlorohydrin in the presence of water in a closed reactor. The system is closed during the charging and reaction. This process produces poly epamines for use as a flocculent. The process is only vented to atmosphere at the end of the batch run.

#### Biodiesel Process R-104 (SN-P1-1)

Biodiesel is manufactured by reacting oil with methanol in the presence of a catalyst. After the reaction is complete, the catalyst is deactivated and excess methanol is stripped off for reuse. Stripping is followed by phase separation and filtration of the final product before recharging the reactor for the next batch.

### **Specific Conditions**

1. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 3-8 and 10. [Regulation No. 19 §19.501 et seq. effective December 19, 2004, and 40 CFR Part 52, Subpart E]

**Table 4 – Maximum Hourly Criteria Pollutant Emission Rates from the P1 Process Building**

SN	Description	Pollutant	lb/hr*
P1-1	Reactor 104	VOC	18.5
P1-2	Reactor 105		
P1-3	Reactor 106		
P1-4	Reactor 114		
P1-5	Tank Farm 500		
P1-7	Reactor 107		
P1-8	Tank Farm 200		
P1-9	Reactors 104, 105, and 107 for mDMDAC		

\*Based upon a 24-hour average.

2. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 3-7 and 9. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 5 – Maximum Hourly Non-Criteria Pollutant Emission Rates from the P1 Process Building**

SN	Description	Pollutant	lb/hr*
P1-1	Reactor 104	Acrylamide <sup>HAP</sup> Epichlorohydrin <sup>HAP</sup> Methanol <sup>HAP</sup> Allyl Chloride <sup>HAP</sup>	0.01 0.03 1.52 4.03
P1-5	Tank Farm 500		
P1-7	Reactor 107		
P1-9	Reactors 104, 105, and 107 for mDMDAC		

\*Based upon a 24-hour average.

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3. The permittee shall operate the packed column scrubber and vent condenser at SN-P1-9 in accordance with manufacturer's specification, or as indicated by stack testing compliance during the manufacture of mDMDAC. The permittee shall operate the packed column scrubber at SN-P1-1 during the manufacture of TAAC in accordance with manufacturer's specification, or as indicated by stack testing compliance at all times. A copy of the recommended scrubber parameters for SN-P1-1 shall be kept at each source and made available to Department personnel upon request. A summary sheet of current scrubber parameters is included in Appendix B of this permit. [§19.303 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
4. The permittee shall measure scrubbing fluid flow at SN-P1-1 once every three hours of operation. Flow rates shall be measured by a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart.

The sampled values shall be kept in a log at the source in order to verify compliance. These records shall be made available to Department personnel upon request.

Confirmation sampling of the caustic strength of SN-P1-1 shall be performed on a weekly basis. Sampling and analysis of the scrubber fluid shall be conducted prior to discharge operations. Records shall be maintained of the date and time of measurements and the caustic strength of the fluid. A minimum of 10% caustic strength shall be maintained. [§19.703 of Regulation 19, 40 CFR Part 52 Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

5. The SN-P1-1 and SN-P1-9 scrubbers shall be charged in accordance with the equipment Standard Operating Procedure (SOP) prior to initiation of a vent down sequence of operation. A record of the vent down operations to the scrubbers shall be maintained and shall include a) date and time of vent down operation and b) batch number(s) vented to the scrubber.

At the conclusion of a reactor vent down cycle, which shall not exceed two batches, the contents of the scrubber will be discharged and the scrubber recharged prior to resumption of reactor vent down operations. A record of the discharge and recharge of each scrubber shall be maintained and shall include a) date and time of recharge and b) batch number(s) vented to the scrubber. [§19.703 of Regulation 19, 40 CFR Part 52 Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

6. SN-P1-9 (Reactors 104, 105, and 107 for mDMDAC) is subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:

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- A. The permittee shall maintain a caustic scrubber liquid flowrate of at least 20 gallons per minute. [40 CFR Part §64.6(c)(1)(i)]
  - B. The permittee shall maintain a minimum of 10% (weight percent) caustic strength at the scrubber. [40 CFR Part §64.6(c)(1)(i)]
  - C. The permittee shall not exceed 35°F at the condenser's chilled water inlet. [40 CFR Part §64.6(c)(1)(i)]
  - D. The permittee shall measure scrubbing fluid flow at SN-P1-9 once every three hours of operation using a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart. [40 CFR Part §64.6(c)(1)(ii) and (c)(3)]
  - E. The permittee shall sample the caustic strength at SN-P1-9 on a weekly basis. Sampling and analysis of the scrubber fluid shall be conducted prior to discharge operations. Records shall be maintained of the date and time of sampling and the caustic strength of the fluid. [40 CFR Part §64.6(c)(1)(ii) and (c)(3)]
  - F. The permittee shall measure and record the inlet temperature at the condenser of SN-P1-9 every three operating hours. The inlet temperature may be measured at the recirculation loop located at the chilled water tank. [40 CFR Part §64.6(c)(1)(ii) and (c)(3)]
  - G. These sampled values shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR Part §64.9(b)]
7. SN-P1-9 (Reactors 104, 105, and 107 for mDMDAC) is subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.9 for Compliance Assurance Monitoring. The following information pertaining to exceedances or excursions from permitted values shall be submitted in semi-annual reports in accordance with General Provision 7 as outlined in 40 CFR §70.6.
- A. The permittee shall maintain records for SN-P1-9 that summarizes the number, duration, and cause of excursions or exceedances of emission limits as well as corrective action taken. [40 CFR §64.9(a)(2)(i) and §64.9(b)]

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- B. The permittee shall maintain records for SN-P1-9 that summarizes the number, duration, and cause of monitoring equipment downtime incidents, other than routine downtime for calibration checks. [40 CFR §64.9(a)(2)(ii) and §64.9(b)]
  - C. The permittee shall maintain a quality improvement plan (QIP) threshold for each indicator of no more than 5% exceedances in a six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - D. The permittee shall develop and implement a new QIP if the threshold is exceeded during any six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - E. The permittee shall maintain records for SN-P1-9 that describes the actions taken to implement the QIP. Upon completion of the QIP, documentation shall be maintained to confirm that the plan was completed and reduced the likelihood of similar excursions or exceedances. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
8. The permittee shall maintain records of VOC lb/hr emissions within the P1 Process Building area and associated storage tanks on a monthly basis. The monthly VOC total divided by the monthly operating hours shall be compared to the value permitted in Specific Condition 1 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]
9. The permittee shall maintain records of hazardous air pollutant (HAP) lb/hr emissions within the P1 Process Building area and associated storage tanks on a monthly basis. The monthly HAP totals divided by the monthly operating hours shall be compared to the values permitted in Specific Condition 2 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
10. The permittee shall test SN-P1-9 for VOC within 180 days of the initial permit issuance, and every 30 months thereafter. The testing shall be performed in accordance with EPA Reference Method 25A. Compliance shall be determined by conformity of the test results with a limit of 1.0 lb/hr. The most recent test was conducted January 14, 2003. [§19.702 of Regulation 19 and 40 CFR Part 52 Subpart E]



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## **P-2 Process Building**

### **Source Description**

DMDAC Polymer and Copolymer Process  
R-101 (SN-P2-1), R-102 (SN-P2-2), and R-103 (SN-P2-3)

DMDAC copolymers are produced by reacting an aqueous solution of mDMDAC with aqueous acrylamide as a second monomer. Therefore, this reaction will produce the acrylamide copolymer.

DMDAC polymers are produced by reacting an aqueous solution of mDMDAC. This reaction produces a DMDAC homopolymer.

The reactor is vented to the atmosphere during the entire process, which includes an initial charging step and reaction. Some products require a nitrogen sparge before or after the reaction. The batch is diluted with water to fulfill customer specifications.

Reactors 102 and 103 yield three products, a DADMAC polymer, a DADMAC acrylamide copolymer, and a DADMAC terpolymer, that are made in a similar process.

Trans Esterification  
R-108 (SN-P2-4)

Methyl (meth)acrylate reacts with alcohol in the presence of a catalyst. This reaction yields the (meth)acrylate ester and methanol. The reaction takes place in a solvent media of cyclohexane and/or heptane. R-108 also has the capability to react ethyl acrylate with an alcohol. This produces an acrylate ester and a side product of ethanol.

NNDMA (N,N-dimethylacrylamide) may also be produced in R-108. NNDMA is a multistep production process that uses an ester, an alcohol, and an amine to produce the final product and an alcohol coproduct.

Finished product is occasionally sparged for a period of 24-hours. During these events, no distillation or reactions occur.

Quat Process  
R-109 (SN-P2-5)

The Quat Process involves an initial charging step, in which a heel of quat is charged and heated. Then, an initial quantity of methyl chloride is fed into a closed reactor vessel and a continuous flow of methyl chloride and (meth)acrylate ester is co-fed into the reactor to begin the reaction. There is

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no venting during the reaction, and the vessel pressure increases as unreacted methyl chloride and air accumulates in the vapor space. As the reaction proceeds, water is also fed into the reaction.

When the reaction is completed, the unreacted methyl chloride and air in the vapor space is vented to the scrubber. Remaining methyl chloride is stripped from the reactor contents under vacuum. With the exception of unreacted methyl chloride, the contents of the reactor during the time the unit is vented to the scrubber are non-volatile. In the scrubber, a single-stage venturi contacts the vented methyl chloride with a circulating stream of (meth)acrylate ester. A majority of the methyl chloride reacts with the (meth)acrylate ester to produce quat, which is recycled back to the reactor in a subsequent batch.

### Specific Conditions

11. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 13-15. [Regulation No. 19 §19.501 *et seq.* effective December 19, 2004, and 40 CFR Part 52, Subpart E]

**Table 6 – Maximum Hourly Criteria Pollutant Emission Rates from the P2 Process Building**

SN	Description	Pollutant	lb/hr*
P2-1	Reactor 101	VOC	12.8
P2-2	Reactor 102		
P2-3	Reactor 103		
P2-4	Reactor 108		
P2-5	Reactor 109		
P2-6	Tank Farm 100		

\*Based upon a 24-hour average.

12. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 13, 15, and 18. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 7 – Maximum Hourly Non-Criteria Pollutant Emission Rates from the P2 Process Building**

SN	Description	Pollutant	lb/hr*
P2-1	Reactor 101	Acrylamide <sup>HAP</sup> Acrylic Acid <sup>HAP</sup> Ethyl Acrylate <sup>HAP</sup> Methanol <sup>HAP</sup> Methyl Methacrylate <sup>HAP</sup> Methyl Chloride <sup>HAP</sup>	
P2-2	Reactor 102		
P2-3	Reactor 103		
P2-4	Reactor 108		
P2-5	Reactor 109		
P2-6	Tank Farm 100		

\*Based upon a 24-hour average.

13. The permittee shall operate the single-stage venturi type scrubbers at SN-P2-1 and SN-P2-5 in accordance with manufacturer's specification, or as indicated by stack testing compliance, at all times. Current scrubber parameters are contained within Specific Condition #15 and Appendix B of this permit. [§19.303 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-31]
14. The SN-P2-1 and SN-P2-5 scrubbers shall be charged prior to initiation of each batch of product to be manufactured. A record of each charge shall be maintained and shall include: a) date and time of the charge, b) quantity of amine charged, and, c) quantity of water charged. Records to demonstrate amine concentration (wt%) shall be maintained and made available to Department personnel upon request.

At the conclusion of each batch cycle, the contents of the scrubber shall be discharged for use in the next batch of product to be manufactured. A record of the discharge of the scrubber shall be maintained and shall include: a) date and time of the discharge, and b) subsequent batch number manufactured.

To perform maintenance or to shutdown one of the quat reactors, two reactor batches may be vented to one scrubber charge, as long as the permittee confirms that the amine concentration of the scrubber is a minimum of 95%.

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The above records shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [§19.703 of Regulation 19, 40 CFR Part 52 Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

15. SN-P2-1 (Reactor 101) and SN-P2-5 (Reactor 109) are subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:
  - A. The permittee shall maintain liquid flowrate of at least 15 gallons per minute. [40 CFR Part §64.6(c)(1)(i)]
  - B. The permittee shall maintain a minimum of 95% (weight percent) amine at the scrubber. Amine concentration shall be verified by the water and amine charge weights as required by Specific Condition 14. [40 CFR Part §64.6(c)(1)(i)]
  - C. The permittee shall measure scrubbing fluid flow, at the SN-P2-1 and SN-P2-5 scrubbers, at the start of vent down operations and at the end of strip operations for each batch using a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart. [40 Part §64.6(c)(1)(ii) and (c)(3)]
  - D. These sampled values shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR Part §64.9(b)]
  
16. SN-P2-1 (Reactor 101) and SN-P2-5 (Reactor 109) are subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.9 for Compliance Assurance Monitoring. The following information pertaining to exceedances or excursions from permitted values shall be submitted in semi-annual reports in accordance with General Provision 7 as outlined in 40 CFR §70.6.
  - A. The permittee shall maintain records that summarize the number, duration, and cause of excursions or exceedances of emission limits as well as corrective action taken. [40 CFR §64.9(a)(2)(i) and §64.9(b)]
  - B. The permittee shall maintain records that summarize the number, duration, and cause of monitoring equipment downtime incidents, other than routine downtime for calibration checks. [40 CFR §64.9(a)(2)(ii) and §64.9(b)]
  - C. The permittee shall maintain a quality improvement plan (QIP) threshold for each indicator of no more than 5% exceedances in a six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]

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- D. The permittee shall develop and implement a new QIP if the threshold is exceeded during any six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - E. The permittee shall maintain records that describe the actions taken to implement the QIP. Upon completion of the QIP, documentation shall be maintained to confirm that the plan was completed and reduced the likelihood of similar excursions or exceedances. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
17. The permittee shall maintain records of VOC lb/hr emissions within the P2 Process Building area and associated storage tanks on a monthly basis. The monthly VOC total divided by the monthly operating hours shall be compared to the value permitted in Specific Condition 11 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]
18. The permittee shall maintain records of hazardous air pollutant (HAP) lb/hr emissions within the P2 Process Building area and associated storage tanks on a monthly basis. The monthly HAP totals divided by the monthly operating hours shall be compared to the values permitted in Specific Condition 12 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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## **P-3 Process Building**

### **Source Description**

There are five similar reactor units in P-3. Five types of operations are run in this equipment. The reactor emissions are controlled by a two-stage packed column caustic scrubber.

#### Trans Esterification

R-110, R-112, R-113, R-115, and R-116 (all under Source SN-P3-1)

Methyl (meth)acrylate reacts with alcohol in the presence of a catalyst. This reaction yields the (meth)acrylate ester and methanol. The reaction takes place in a solvent media of cyclohexane and/or heptane. P-3 also has the capability to react ethyl acrylate with an alcohol. This produces an acrylate ester and a side product of ethanol. (Meth)acrylate esters are produced in all P-3 reactors.

#### Direct Esterification

R-112, R-113 (SN-P3-1)

(Meth)acrylic acid reacts with alcohol in the presence of a catalyst. This reaction yields (meth)acrylate ester and water. The reaction takes place in a solvent media of cyclohexane and/or heptane. (Meth)acrylate esters may be produced by the direct esterification route in R-112 and R-113.

#### Epoxidation

R-112, R-113 (SN-P3-1) and Wash Tanks (SN-P3-10b)

Alcohol is reacted with epichlorohydrin in the presence of a catalyst to produce monochlorohydrin. This reaction can take place in R-112 or R-113. The monochlorohydrin is reacted with caustic in a wash tank before final distillation in a reactor.

#### Solvent Recovery

R-112, R-113, R-110, R-115, and R-116 (SN-P3-1)

Solvents from esterification are distilled in R-112, R-113, R-110, R-115, and R-116 to permit reuse in future reactions. The facility may recover methanol or isopropanol at this source.

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Tank Farm 600

(SN-P3-2)

The tank farm consists of several vessels of varying capacities which are used to store components or products of reactions. Tanks T-606, T-623, T-620, and T-627 are used for additional cyclo/MMA storage service. Also, tanks T-615 and T-612 are used for ester service (storage).

Tank Farms 600 and 400

(SN-P3-2 and SN-P3-3)

These tank farms consist of several vessels of varying capacities which are used to store components or products of reactions.

Methanol Recovery

SN-P3-11

The by-product methanol/water streams from the trans-esterification processes are mixed with caustic to saponify residual (meth)acrylate. A portion of the methanol/water solution is then distilled in R-112, R-110, R-113, R-115, R-116 (SN-P3-1) or the methanol recovery still for recovery. The remaining portion is shipped off-site for recovery. Emissions from the methanol recovery still are controlled by a chilled vent condenser.

Wash Tanks

SN-P3-10

The esters produced in the reactors are washed in the wash tanks with water, dilute caustic, and/or brine (sodium chloride) to remove excess acid, catalyst, and impurities. On occasion, the wash tanks can be used for a process rework. Emissions from the wash tanks are controlled by a chilled vent condenser. The tanks are, on occasion, rinsed with methanol.

Boilers

Boiler #1 (SN-P3-4), Boiler #3 (SN-P3-6)

Boiler #1 and Boiler #3 are used to supply steam for facility processes (Boiler #2 has been removed from service). Boiler #1 is natural gas-fired with a design heat input of 33.5 MMBTU/hr. Boiler #3 is allowed to use natural gas, by-product methanol, or byproduct isopropanol on a continuous basis. The design heat input of Boiler #3 is 29.4 MMBTU/hr. Boiler emission estimates have been calculated at maximum capacity, assuming year-round operation at worst-case scenario.

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Boiler #1 and Boiler #3 are subject to the requirements of 40 CFR Part 60, Subpart Dc (Standards for Small Industrial-Commercial-Institutional Steam Generating Units). Both boilers in this process area are allowed to use No. 2 fuel oil during times of natural gas curtailment.

**Fire Emergency Pump**  
 SN-P3-7

Two 368-horsepower diesel-fired engines (one to act as a spare) power the fire water pumps, if necessary, to provide copious amounts of water in case of a plant fire or other emergency event. The fire pump is tested on a weekly basis to ensure operability. The short-term emissions have been calculated at maximum capacity, no more than one pump in operation at a time, but with a long-term limit of 200 hours of operation per year.

**Inhibitor Vats**  
 SN-P3-13

Several vessels have the capability of being used as inhibitor vats during the transesterification P3 processes. During the charging of the process reactor, methanol and methyl (meth) acrylate or final product can be charged to an inhibitor vat and mixed with inhibitor to prevent polymerization in the reactor distillation columns. Emissions for this source are comprised of the 75-gallon unsealed vats. Sealed vats are part of the reactor systems and are vented through SN-P3-1, along with displaced gas from the reactors.

**Specific Conditions**

19. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 21-27 and 29-37. [Regulation No. 19 §19.501 *et seq.* effective December 19, 2004, and 40 CFR Part 52, Subpart E]

**Table 8 – Maximum Hourly Criteria Pollutant Emission Rates from the P3 Process Building**

SN	Description	Pollutant	lb/hr*
P3-1	Reactors 110, 112, 113, 115, 116	PM <sub>10</sub>	1.1
P3-2	Tank Farm 600	SO <sub>2</sub>	32.7
		VOC	14.0
P3-3	Tank Farm 400	CO	11.1
		NO <sub>x</sub>	20.2
P3-4	Boiler #1		



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SN	Description	Pollutant	lb/hr*
P3-6	Boiler #3		
P3-7	Fire Emergency Pump		
P3-8	500 Gallon Gasoline Tank		
P3-9	500 Gallon Diesel Tank		
P3-10	Wash Tanks		
P3-11	Methanol Recovery		
P3-12	Tank Farm 700		
P3-13	Inhibitor Vats		

\*Based upon a 24-hour average.

20. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 25-27, and 38. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 9 – Maximum Hourly Non-Criteria Pollutant Emission Rates from the P3 Process Building**

SN	Description	Pollutant	lb/hr*
P3-1	Reactors 110, 112, 113, 115, 116	PM	1.1
		Acetone	0.5
P3-2	Tank Farm 600	Acrylic Acid <sup>HAP</sup>	0.01
		Ethyl Acrylate <sup>HAP</sup>	0.50
P3-3	Tank Farm 400	Methanol <sup>HAP</sup>	2.30
		Methyl Methacrylate <sup>HAP</sup>	1.43
P3-4	Boiler #1		
P3-6	Boiler #3		
P3-7	Fire Emergency Pumps		
P3-10	Wash Tanks		

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SN	Description	Pollutant	lb/hr*
P3-11	Methanol Recovery		
P3-13	Inhibitor Vats		

\*Based upon a 24-hour average.

21. The permittee shall not exceed 5% opacity at SN-P3-4 and SN-P3-6 during usage of natural gas. The permittee shall not exceed 20% opacity during periods of fuel oil usage. The permittee shall not exceed 5% opacity during usage of methanol/isopropanol byproduct at SN-P3-6. Compliance with this limit shall be satisfied through the requirements of Specific Conditions 23, 29, and 30. [§18.501 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
22. The permittee shall not exceed 20% opacity at SN-P3-7. Compliance with this limit shall be satisfied through the requirements of Specific Condition 23. [§19.503 of Regulation 19 and 40 CFR Part 52 Subpart E]
23. The permittee shall conduct weekly observations of opacity for SN-P3-4 and SN-P3-6. The weekly observations shall only be required during periods where fuel oil usage exceeds one week.

Daily observations shall be required for SN-P3-7. The daily observations shall only be required when fire pump use exceeds 24-hours per event. The visible emission observations shall be used as a method of compliance verification for the opacity limit at SN-P3-4, SN-P3-6, SN-P3-7. The observations shall be conducted by personnel familiar with the facility's visible emissions. If during the daily/weekly observations, visible emissions are detected which appear to be in excess of the permitted opacity limit, the permittee shall:

- a) Take immediate action to identify the cause of the visible emissions.
- b) Implement all necessary corrective action.
- c) Reassess the visible emissions after corrective action is taken.
  - i. If excessive visible emissions are still detected, an opacity reading shall be conducted in accordance with EPA Reference Method 9. This reading shall be conducted by personnel trained and certified in the reference method. If the opacity reading exceeds the permitted limit, further corrective measures shall be taken.

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- ii. If no excessive visible emissions are detected, the incident shall be noted in the records as described below.

24. The permittee shall maintain records related to all visible emission observations and Method 9 Readings, to be updated on an as-performed basis. The records shall be kept on site and made available to Department personnel upon request. The records shall contain the following items:

- 2) the date and time of each observation/reading.
- 3) any observance of visible emissions appearing to be above permitted limits, or any Method 9 reading which indicates exceedance.
- 4) the cause of any observed exceedance of opacity limits, corrective action taken, and results of the reassessment.
- 5) The name of the person conducting the observation/reading.

[§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

25. The permittee shall operate the packed column scrubber at SN-P3-1 and the chilled vent condensers at SN-P3-10 and SN-P3-11 in accordance with manufacturer's specification, or as indicated by stack testing compliance, at all times. Current scrubber /condenser parameters are contained within Specific Conditions 26, 27, and Appendix B of this permit. [§19.303 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

26. SN-P3-1 (Reactors 110, 112, 113, 115, 116) is subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:

- A. The permittee shall maintain a caustic scrubber liquid flowrate of at least 40 gallons per minute. [40 CFR §64.6(c)(1)(i)]
- B. The permittee shall measure scrubbing fluid flow at the educator and column of the SN-P3-1 scrubber once every four hours of operation using a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart. [40 CFR §64.6(c)(1)(ii) and (c)(3)]

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- C. The caustic monitoring system shall charge fresh caustic to the scrubber whenever the pH for a given batch drops below 12. The pH readings shall be measured once every four hours of operation. [40 CFR §64.6(c)(i), (c)(ii), and (c)(3)]
  - D. The scrubbing fluid flow rates and pH values shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR §64.9(b)]
27. SN-P3-10 (Wash Tanks) and SN-P3-11 (Methanol Recovery) are subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:
- A. The permittee shall not exceed 35°F at the condenser's chilled water inlet. [40 CFR Part §64.6(c)(1)(i)]
  - B. The permittee shall measure the chilled vent condenser inlet temperatures at SN-P3-10 and SN-P3-11 once every three operating hours. The inlet temperature may be measured at the recirculation loop located at the chilled water tank. [40 CFR §64.6(c)(1)(ii) and (c)(3)]
  - C. The measured values shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR §64.9(b)]
28. SN-P3-1 (Reactors 110, 112, 113, 115, 116), SN-P3-10 (Wash Tanks), and SN-P3-11 (Methanol Recovery) are subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.9 for Compliance Assurance Monitoring. The following information pertaining to exceedances or excursions from permitted values shall be submitted in semi-annual reports in accordance with General Provision 7 as outlined in 40 CFR §70.6.
- A. The permittee shall maintain records that summarize the number, duration, and cause of excursions or exceedances of emission limits as well as corrective action taken. [40 CFR §64.9(a)(2)(i) and §64.9(b)]
  - B. The permittee shall maintain records that summarize the number, duration, and cause of monitoring equipment downtime incidents, other than routine downtime for calibration checks. [40 CFR §64.9(a)(2)(ii) and §64.9(b)]
  - C. The permittee shall maintain a quality improvement plan (QIP) threshold for each indicator of no more than 5% exceedances in a six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]

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- D. The permittee shall develop and implement a new QIP if the threshold is exceeded during any six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - E. The permittee shall maintain records that describe the actions taken to implement the QIP. Upon completion of the QIP, documentation shall be maintained to confirm that the plan was completed and reduced the likelihood of similar excursions or exceedances. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
29. The Boiler #1 and Boiler #3 (SN-P3-4 and SN-P3-6) shall fully comply with all applicable requirements of the 40 CFR 60 Subpart Dc - *Standards for Small Industrial-Commercial-Institutional Steam Generating Units* (see Appendix A). These requirements include, but are not limited to, the following.

For natural gas combustion:

*Recordkeeping* [from 60.48c(g), (i)]. Amounts of each fuel combusted shall be recorded on a monthly basis. The records shall be maintained by the facility for a period of two years following the date of recording.

For by-product methanol and/or isopropanol combustion at Boiler #3 (SN-P3-6) only.

*Recordkeeping* [from 60.48c(g), (i)]. Amounts of each fuel combusted shall be recorded on a daily basis. The records shall be maintained by the facility for a period of two years following the date of recording.

For No. 2 fuel oil (see the regulation in Appendix A for details):

*Sulfur Standards* [60.42c(d)]. Sulfur content shall be limited to 0.5 or less weight percent.

*Sulfur Limit Compliance* [from 60.46(e)] Compliance with the sulfur content limits shall be demonstrated by certification from the fuel supplier as described under 60.48c(f).

*Recordkeeping* [from 60.48c(g), (i)]. Amounts of each fuel combusted shall be recorded on a monthly basis. The records shall be maintained by the facility for a period of two years following the date of recording.

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Quarterly Reporting [from 60.48c(d), (e), (e)(1), (e)(5)-(6), (e)(11), (f)] Submit quarterly reports of 30-day average SO<sub>2</sub> emission rate (ng/J or lb/million Btu) or 30-day average sulfur content, records of fuel supplier certification as described under paragraph (f), and a certified statement signed by the owner or operator that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.

[§19.304 of the Regulation 19 and 40 CFR Part 60 Subpart Dc]

30. The permittee shall not use more than 4,600,000 gallons of by-product methanol and isopropanol, combined, as fuel at SN-P3-6 (Boiler #3) per rolling 12-month period. Compliance with this condition shall be verified by maintaining daily records of the amount of fuel used. These records shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 52, Subpart E]
31. The permittee will sample and analyze the methanol by-product semi-annually in accordance with the methanol by-product analysis plan and the provisions of 40 CFR 261.38 to ensure the constituents listed in this subpart are not present over RCRA threshold amounts. These threshold values are listed below.

**Table 10 – Limits for Methanol By-Product Sampling**

Value	Limit
BTU	>5,000 BTU/lb
Total Nitrogen	≤ 4,900
Toluene	≤ 36,000 mg/kg
Viscosity	≤ 50 centipoise

[§19.304 of Regulation 19 and 40 CFR Subpart 261.38]

32. The permittee will sample and analyze the isopropanol by-product semi-annually in accordance with the by-product analysis plan and the provisions of 40 CFR 261.38 to ensure the constituents listed in this subpart are not present over RCRA threshold amounts. These threshold values are listed below. This information shall be kept on site and made available to Department personnel upon request.

**Table 11 – Limits for Isopropanol By-Product Sampling**

Value	Limit
BTU	> 5,000 BTU/lb
Total Nitrogen	≤ 4,900 mg/kg
Total Chloride	≤ 540 mg/kg
Acrolein	≤ 37 mg/kg
Viscosity	≤ 50 centipoise

[§19.304 of Regulation 19 and 40 CFR Subpart 261.38]

33. The permittee shall conduct an initial test for VOC at SN-P3-6 in accordance with EPA Reference Method 25A. The testing shall conform with the requirements of Plantwide Conditions 3 and 4. The initial test was completed July 2001 as a condition of 860-AOP-R2. [§19.702 of Regulation 19 and 40 CFR Part 52 Subpart E]
34. The permittee shall conduct an initial test for NO<sub>x</sub> at SN-P3-6 in accordance with EPA Reference Method 7E. The testing shall be conducted within 180 days of permit issuance, and shall conform with the requirements of Plantwide Conditions 3 and 4. The testing shall be performed when the boiler is operating at a minimum 90% capacity of combined by-product usage, in which both isopropanol and methanol by-product fuel are represented. The ratio of isopropanol to methanol byproduct shall be recorded and submitted to the Department with test results for compliance determination. The initial test was completed May 2004 as a condition of 860-AOP-R5. The Department reserves the right to require additional testing at different ratios at a later date. [§19.702 of Regulation 19 and 40 CFR Part 52, Subpart E]
35. The following storage tanks shall fully comply with all applicable requirements of 40 CFR 60 Subpart Kb - *Standards of Performance for Volatile Organic Liquid Storage Vessels* (see Appendix A):

**Table 12 - P3 Building Tanks Subject to NSPS Subpart Kb**

Source	Tank #	Location	Capacity	Contents
SN-P3-2	605	Tank Farm 600	21,000 gallon	Methyl Methacrylate

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Source	Tank #	Location	Capacity	Contents
SN-P3-3	400, 401	Tank Farm 400	25,000 gallon	Allyl Chloride
SN-P3-12	700	Tank Farm 700	50,000 gallon	Dimethyl Amine

Applicable requirements include, but are not limited to, the items outlined in Plantwide Condition 9. [§19.304 of Regulation 19 and 40 CFR Part 60 Subpart Kb]

36. The permittee shall not operate the Fire Emergency Pumps (SN-P3-7) more than 200 hours combined per rolling 12-month period for testing and maintenance purposes. The permittee may not operate both pumps simultaneously. Records of testing/maintenance operation time shall be maintained on site, updated on a per-event basis, and made available to Department personnel upon request. Operation time required for actual emergency use is not restricted by this permit. [§19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6]
  
37. The permittee shall maintain records of VOC lb/hr emissions within the P3 Process Building area and associated storage tanks on a monthly basis. For the SN-P3-10 wash tanks, the facility shall assume a theoretical maximum of 64 lb VOC per batch processed. The monthly VOC total divided by the monthly operating hours shall be compared to the value permitted in Specific Condition 19 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 52 Subpart E]
  
38. The permittee shall maintain records of hazardous air pollutant (HAP) lb/hr emissions within the P3 Process Building area and associated storage tanks on a monthly basis. For the SN-P3-10 wash tanks, the facility shall assume a theoretical maximum of 7.5 lb methyl methacrylate and 9.6 lb methanol per batch processed. The monthly HAP totals divided by the monthly operating hours shall be compared to the values permitted in Specific Condition 20 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]



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## **P-4 Process Building**

### **Source Description**

#### Cationic Monomer Plant

The Cationic Monomer Plant uses the semi-continuous process technology which has been developed through two generations at the site. The plant is dedicated to the production of dimethyl amino ethyl acrylate (FA-1), with provision for the production of the process catalyst. The expansion also includes a new dedicated tank farm.

The reaction section of the process consists of two (2) continuous stirred tank reactors. Methyl acrylate (MAC), catalyst, and other reactants are fed into the primary reactor, which will operate in series with the remaining reactor.

Noncondensables from the system are routed to the off-gas scrubbing units. The off-gases are scrubbed with sodium hydroxide solution followed by sulfuric acid solution before being passed through a carbon adsorber. The adsorber gases are vented to the atmosphere. The plant control system automatically shuts down the process plant unless a minimum circulation flow on one caustic and one acid scrubber is being measured.

All storage tanks (SN-P4-2) associated with the Cationic Monomer Plant (except the catalyst tank, which has no vapor pressure) are vented by conservation vents to the scrubber system.

Fugitive emissions (SN-P4-4) will arise from equipment leaks in P4. Fugitive emissions also arise from the loading and unloading of truck tanks and rail cars (SN-P4-3).

Boiler #4 (SN-P4-5) operates to generate steam, which is used in various chemical processing operations. The boiler is equipped to burn either natural gas or, during times of natural gas curtailment, No. 2 fuel oil (10,000 gallon oil tank, SN-P4-6). Boiler emission estimates have been calculated at maximum capacity, assuming year-round operation.

Boiler #4 is subject to the requirements of 40 CFR Part 60, Subpart Dc (*Standards for Small Industrial-Commercial-Institutional Steam Generating Units*).

#### Quaternization (SN-P4-7)

In a future planned addition to the P-4 Process Building, cationic monomer (DMAEA) from the previously mentioned process is reacted with methyl chloride to produce methyl chloride

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quaternized di methyl amino ethyl acrylate (quat monomer). DMAEA, methyl chloride, and water are fed to a reactor where the DMAEA is converted to quat monomer.

Quat monomer exiting the reactor is fed to the quat stripper. Air from the monomer scrubber is used to strip impurities from the quat monomer product. Air exiting the quat stripper enters the caustic scrubber. Here, methyl acrylate and the smaller quantities of impurities are absorbed. This is taken as a waste stream and sent to the existing effluent treatment plant.

The monomer feed to the first reactor is fed via the monomer scrubber. Air laden with methyl chloride exiting the caustic scrubber is fed to the monomer scrubber.

Some of the air exiting the monomer scrubber enters the water scrubber. In the water scrubber, any carry-over of DMAEA and other volatile impurities are absorbed by the water. The air from the water scrubber is then released to atmosphere (SN-P4-7). This is the only emission point from this additional process. The water exiting the scrubber is fed to the primary reactor under flow control.

A leak detection and repair program is maintained for the P-4 process area, to assist in the control of fugitive emissions.

### Specific Conditions

39. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 42-46, 48-54, and Plantwide Condition 7. [Regulation No. 19 §19.501 *et seq.* effective December 19, 2004, and 40 CFR Part 52, Subpart E]

**Table 13 – Maximum Hourly Criteria Pollutant Emission Rates from the P4 Process Building**

SN	Description	Pollutant	lb/hr*
P4-1	P4 Cationic Monomer Reactors	PM <sub>10</sub>	0.5
P4-2	P4 Tank Farm	SO <sub>2</sub>	17.0
		VOC	5.1
P4-3	P4 Loading/Unloading	CO	4.8
		NO <sub>x</sub>	3.4
P4-4	P4 Equipment Leaks		
P4-5	Boiler #4		
P4-6	25,000 Gallon Diesel Storage Tank		

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SN	Description	Pollutant	lb/hr*
P4-7	Quat Plant		
P4-8	25,000 Gallon Diesel Storage Tank		

\*Based upon a 24-hour average.

40. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Conditions 42-44, 55, and Plantwide Condition 8. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 14 – Maximum Hourly Non-Criteria Pollutant Emission Rates from the P4 Process Building**

SN	Description	Pollutant	lb/hr*
P4-1	P4 Cationic Monomer Reactors	PM	0.5
P4-5	Boiler #4	Methanol <sup>HAP</sup>	0.52
P4-7	Quat Plant	Methyl Chloride <sup>HAP</sup>	2.30

\*Based upon a 24-hour average.

41. The permittee shall not exceed 5% opacity at SN-P4-5 during usage of natural gas. The permittee shall not exceed 20% opacity during periods of fuel oil usage. Compliance with the 20% opacity limit shall be satisfied through the requirements of Specific Condition 42 and 43. [§18.501 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
42. The permittee shall conduct weekly observations of opacity for SN-P4-5. The weekly observations shall only be required during periods where fuel oil usage exceeds one week. The visible emission observations shall be used as a method of compliance verification for the opacity limit at SN-P4-5. The observations shall be conducted by personnel familiar with the facility's visible emissions. If during the weekly observations, visible emissions are detected which appear to be in excess of the permitted opacity limit, the permittee shall:
- a) Take immediate action to identify the cause of the visible emissions.
  - b) Implement all necessary corrective action.

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- c) Reassess the visible emissions after corrective action is taken.
  - i. If excessive visible emissions are still detected, an opacity reading shall be conducted in accordance with EPA Reference Method 9. This reading shall be conducted by personnel trained and certified in the reference method. If the opacity reading exceeds the permitted limit, further corrective measures shall be taken.
  - ii. If no excessive visible emissions are detected, the incident shall be noted in the records as described below.

[§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

43. The permittee shall maintain daily/weekly records related to all visible emission observations and Method 9 Readings. The records shall be kept on site and made available to Department personnel upon request. The records shall contain the following items:

- 1) the date and time of each observation/reading.
- 2) any observance of visible emissions appearing to be above permitted limits, or any Method 9 reading which indicates exceedance.
- 3) the cause of any observed exceedance of opacity limits, corrective action taken, and results of the reassessment.
- 4) The name of the person conducting the observation/reading.

[§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

44. The permittee shall operate at least one caustic scrubber, one acid scrubber, and one carbon absorber at SN-P4-1, as well as the caustic and water scrubbers at SN-P4-7 in accordance with manufacturer's specification, or as indicated by stack testing compliance, at all times. Current scrubber parameters are contained within Specific Condition 45 and Appendix B of this permit. [§19.303 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

45. SN-P4-1 (P4 Cationic Monomer Reactors) is subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:

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- A. The permittee shall maintain a caustic scrubber liquid flowrate of at least 40 gallons per minute. [40 CFR §64.6(c)(1)(i)]
  - B. The permittee shall maintain a concentration minimum of 3%, for both caustic and acid media. [40 CFR §64.6(c)(1)(i)]
  - C. The permittee shall measure scrubbing fluid flow at the SN-P4-1 scrubbers once every three hours of operation with a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart. [40 CFR §64.6(c)(1)(ii) and (c)(3)]
  - D. The caustic and acid concentrations at the SN-P4-1 scrubbers shall be sampled once every seven days of operation. If sampling shows that an SN-P4-1 scrubber concentration has fallen below 3%, the scrubber shall be regenerated in order to maintain the scrubbing system at a minimum of 3%, for both caustic and acid media. [40 CFR §64.6(c)(ii), and (c)(3)]
  - E. The sampled flow values and the sampled caustic and acid concentrations shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR §64.9(b)]
46. SN-P4-7 (Quat Plant scrubber) is subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.6 for Compliance Assurance Monitoring:
- A. The permittee shall maintain a caustic scrubber liquid flowrate of at least 3 gallons per minute. [40 CFR §64.6(c)(1)(i)]
  - B. The permittee shall maintain a concentration minimum of 2% caustic. [40 CFR §64.6(c)(1)(i)]
  - C. The permittee shall measure scrubbing fluid flow at the SN-P4-7 scrubbers once every three hours of operation using a flow meter. In the event that the permittee must perform maintenance on the flow meter, scrubbing fluid flow may be derived and recorded from a pump curve performance chart. [40 CFR §64.6(c)(1)(ii) and (c)(3)]

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- D. The caustic and acid concentrations at the SN-P4-7 caustic scrubber shall be sampled once every seven days of operation. If sampling shows that an SN-P4-7 caustic scrubber concentration has fallen below 2%, the scrubber shall be regenerated in order to maintain the scrubbing system at a minimum of 2% caustic. [40 CFR §64.6(c)(ii), and (c)(3)]
  - E. The sampled flow values and the sampled caustic and acid concentrations shall be kept in a log at the source. These records shall be made available to Department personnel upon request. [40 CFR §64.9(b)]
47. SN-P4-1 (P4 Cationic Monomer Reactors) and SN-P4-7 (Quat Plant scrubber) are subject to and shall comply with all applicable provisions §19.304 of Regulation 19, 40 CFR Part 52 Subpart E, and Part §64.9 for Compliance Assurance Monitoring. The following information pertaining to exceedances or excursions from permitted values shall be submitted in semi-annual reports in accordance with General Provision 7 as outlined in 40 CFR §70.6.
- A. The permittee shall maintain records that summarize the number, duration, and cause of excursions or exceedances of emission limits as well as corrective action taken. [40 CFR §64.9(a)(2)(i) and §64.9(b)]
  - B. The permittee shall maintain records that summarize the number, duration, and cause of monitoring equipment downtime incidents, other than routine downtime for calibration checks. [40 CFR §64.9(a)(2)(ii) and §64.9(b)]
  - C. The permittee shall maintain a quality improvement plan (QIP) threshold for each indicator of no more than 5% exceedances in a six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - D. The permittee shall develop and implement a new QIP if the threshold is exceeded during any six-month period. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
  - E. The permittee shall maintain records that describe the actions taken to implement the QIP. Upon completion of the QIP, documentation shall be maintained to confirm that the plan was completed and reduced the likelihood of similar excursions or exceedances. [40 CFR §64.9(a)(2)(iii) and §64.9(b)]
48. Boiler #4 (SN-P4-5) shall fully comply with all applicable requirements of the *Standards for Small Industrial-Commercial-Institutional Steam Generating Units* (see Appendix A). These requirements include, but are not limited to, the following.

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For natural gas combustion:

*Recordkeeping* [from 60.48c(g), (i)]. Amounts of each fuel combusted shall be recorded on a monthly basis. The records shall be maintained by the facility for a period of two years following the date of recording.

For No. 2 fuel oil (see the regulation in Appendix A for details):

*Sulfur Standards* [60.42c(d)]. Sulfur content shall be limited to 0.5 or less weight percent.

*Sulfur Limit Compliance* [from 60.46(e)] Compliance with the sulfur content limits shall be demonstrated by certification from the fuel supplier as described under 60.48c(f).

*Recordkeeping* [from 60.48c(g), (i)]. Amounts of each fuel combusted shall be recorded on a monthly basis. The records shall be maintained by the facility for a period of two years following the date of recording.

*Quarterly Reporting* [from 60.48c(d), (e), (e)(1), (e)(5)-(6), (e)(11), (f)] Submit quarterly reports of 30-day average SO<sub>2</sub> emission rate (ng/J or lb/million Btu) or 30-day average sulfur content, records of fuel supplier certification as described under paragraph (f), and a certified statement signed by the owner or operator that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.

[§19.304 of the Regulation 19 and 40 CFR Part 60 Subpart Dc]

49. The permittee shall fully comply with all applicable requirements of the *Standards of Performance for Volatile Organic Liquid Storage Vessels* (see Appendix A) for the following tanks:

**Table 15 - P4 Building Tanks Subject to NSPS Subpart Kb**

# Tanks	Capacity	Contents
4	32,000 gallon	Methyl Acrylate
4	32,000 gallon	Dimethylamino Ethanol

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# Tanks	Capacity	Contents
2	32,000 gallon	Byproduct Methanol or Byproduct Methanol/Isopropanol Blend
1	32,000 gallon	Tetra Isopropyl Titanate
1	32,000 gallons	Byproduct Isopropanol
6	32,000 gallons	Dimethyl Amino Ethyl Acrylate
1	20,000 gallons	FA-1 Highboilers

All the above listed tanks are in the P4 Tank Farm and are permitted under source number SN-P4-2. Applicable requirements include, but are not limited to, the items outlined in Plantwide Condition 9. [§19.304 of Regulation 19 and 40 CFR Part 60 Subpart Kb]

50. The Cationic Monomer Plant (SN-P4-1) shall fully comply with all applicable requirements of the Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (see Appendix A). Applicable requirements include, but are not limited to, the items outlined below. Testing for this source was completed on March 20, 2001 and June 1, 2001 as a condition of Air Permit 860-AOP-R0. [§19.304 of Regulation 19 and 40 CFR Part 60 Subpart NNN]

**Table 16 - NSPS Subpart NNN Requirements for VOC Emissions for SOCMI Distillation Operations**

Subpart NNN: VOC Emissions for SOCMI Distillation Operations	
Emission Unit(s)	<ul style="list-style-type: none"> <li>•Distillation units not discharging vent stream into recovery system.</li> <li>•Combinations of distillation unit(s) and recovery system into which its vent stream(s) is discharged.</li> </ul>
Pollutant(s)	VOC
Emission Standard/Avg Time	<ul style="list-style-type: none"> <li>•98% reduction efficiency or reduce concentration to 20 ppmv (dry basis) corrected to 3% O<sub>2</sub>, whichever is less stringent/3-hr avg.</li> <li>•Note: If boiler or process heater used to comply, vent stream must be introduced into flame zone.</li> </ul>



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Subpart NNN: VOC Emissions for SOCM Distillation Operations		
Monitoring	<p>Incinerator Units:</p> <ul style="list-style-type: none"> <li>•Continuous monitoring and recording of temperature:                             <ul style="list-style-type: none"> <li>-in firebox (thermal).</li> <li>-before and after bed (catalytic).</li> </ul> </li> <li>•At least hourly measurement using flow indicator of vent stream flow to incinerator.</li> </ul>	<p>Boiler/Process Heater Units:</p> <ul style="list-style-type: none"> <li>•Continuous monitoring and recording of temperature in firebox</li> <li>•Monitoring and recording of periods of operation (if boiler process heater <math>\geq 44</math> MW heat input capacity).</li> <li>•At least hourly measurement using flow indicator of vent stream flow to boiler/process heater.</li> </ul>
PS/QA	<p>Monitor Accuracy:</p> <ul style="list-style-type: none"> <li>•Temperature: Greater of <math>\pm 1\%</math> or <math>\pm 0.5^\circ\text{C}</math>.</li> <li>•Flow: Location specifications.</li> </ul>	<p>Monitor Accuracy:</p> <ul style="list-style-type: none"> <li>•Temperature: Greater of <math>\pm 1\%</math> or <math>\pm 0.5^\circ\text{C}</math>.</li> <li>•Boiler/process heater records of operation readily available for inspection.</li> <li>•Flow indicator: Location specifications.</li> </ul>
Exceedance Level	<ul style="list-style-type: none"> <li>•Any 3-hr period in which temperature <math>&gt;28^\circ\text{C}</math> below baseline (thermal and pre-bed temperature monitor for catalytic).</li> <li>•Any period in which temperature difference across catalytic bed <math>&lt;80\%</math> of baseline.</li> </ul>	<ul style="list-style-type: none"> <li>•Any 3-hr period in which temperature <math>&gt;28^\circ\text{C}</math> below baseline.</li> <li>•Boilers/Process Heaters: Change in location of where vent stream introduced into flame zone.</li> </ul>
Performance Testing (PT)		
Test Method	<ul style="list-style-type: none"> <li>•RM's 1, 2 (2A, 2C, 2D), 3 and 18, as applicable.</li> </ul>	
When Conducted	<ul style="list-style-type: none"> <li>•Initial, except waived if boiler/process heater <math>\geq 44</math> MW heat input capacity.</li> </ul>	
Specific Reporting	<ul style="list-style-type: none"> <li>•PT data and results.</li> <li>•Semiannual reports of exceedance, including periods when vent stream diverted from controls or when no flow rate, and any periods in which an applicable boiler or process heater not operating.</li> </ul>	
Specific Recordkeeping	<ul style="list-style-type: none"> <li>•Detailed requirements similar to data required for reporting.</li> </ul>	

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Subpart NNN: VOC Emissions for SOCM I Distillation Operations	
Emission Unit(s)	<ul style="list-style-type: none"> <li>•Distillation units not discharging vent stream into recovery system.</li> <li>•Combinations of distillation unit(s) and recovery system into which its vent stream(s) is discharged.</li> </ul>
Pollutant(s)	VOC
Emission Standard/Avg Time	Combust emissions in a flare meeting §60.18/None.
Monitoring System/Procedure	<ul style="list-style-type: none"> <li>•Heat sensing device, such as a thermocouple or ultra-violet beam sensor at pilot light to indicate continuous presence of flame.</li> <li>•At least hourly measurement using flow indicator of vent stream flow to flare.</li> </ul>
PS/QA	<ul style="list-style-type: none"> <li>•Flow indicator: Location specifications.</li> </ul>
Exceedance Level	<ul style="list-style-type: none"> <li>•None.</li> </ul>
Performance Testing (PT) Test Method	<ul style="list-style-type: none"> <li>•§60.18 requirements apply:                             <ul style="list-style-type: none"> <li>-RM 22 for VE. -</li> <li>Procedures for determining net heating value (RM 18 and ASTM Methods). -</li> <li>Exit velocity using RM 2 (or 2A, 2C, 2D).</li> </ul> </li> </ul>
When Conducted	<ul style="list-style-type: none"> <li>•Initial.</li> </ul>
Specific Reporting	<ul style="list-style-type: none"> <li>•PT data and results</li> <li>•Semiannual report of periods when pilot flame absent and when vent stream diverted from flare or has no flow rate.</li> </ul>
Specific Recordkeeping	<ul style="list-style-type: none"> <li>•Detailed requirements similar to data required for reporting.</li> <li>•Includes all data records from pilot flame monitor.</li> </ul>
Subpart NNN: VOC Emissions for SOCM I Distillation Operations	
Emission Unit(s)	<ul style="list-style-type: none"> <li>•Distillation units not discharging vent stream into recovery system.</li> <li>•Combinations of distillation unit(s) and recovery system into which its vent control stream(s) is discharged.</li> </ul>
Pollutant(s)	VOC
Emission Standard/Avg Time	Maintain TRE index value greater than 1.0 without use of VOC emission control devices/Not specified.

Subpart NNN: VOC Emissions for SOCM Distillation Operations				
Monitoring	Absorber Units:	Condenser Units	Carbon Adsorber Units:	Alternative for any Recovery Device:
System/Procedure	<ul style="list-style-type: none"> <li>•Continuous monitoring and recording of:               <ul style="list-style-type: none"> <li>-Scrubbing liquid temperature.</li> <li>-Specific gravity.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•Continuous monitoring and recording of:               <ul style="list-style-type: none"> <li>-Temperature.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•Continuous monitoring and recording of:               <ul style="list-style-type: none"> <li>-Steam flow.</li> <li>-Carbon bed temperature.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•VOC CEMS at exit.</li> </ul>
PS/QA	<ul style="list-style-type: none"> <li>•Monitor accuracy:               <ul style="list-style-type: none"> <li>-Temperature: Greater of <math>\pm 1\%</math> or <math>\pm 0.5^{\circ}\text{C}</math>.</li> <li>-Specific Gravity: <math>\pm 0.02</math> units.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•Monitor accuracy:               <ul style="list-style-type: none"> <li>-Temperature: Greater of <math>\pm 1\%</math> or <math>\pm 0.5^{\circ}\text{C}</math>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•Monitor accuracy:               <ul style="list-style-type: none"> <li>Steam flow: <math>\pm 10\%</math>.</li> <li>-Temperature: Greater of <math>\pm 1\%</math> or <math>\pm 0.5^{\circ}\text{C}</math>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>•None.</li> </ul>
Exceedance Level	<ul style="list-style-type: none"> <li>•Any 3-hr period in which temperature <math>&gt;11^{\circ}\text{C}</math> above baseline.</li> <li>•Any 3-hr period in which specific gravity <math>&gt;\pm 0.1</math> unit from baseline.</li> </ul>	<ul style="list-style-type: none"> <li>•Any 3-hr period in which temperature <math>&gt;6^{\circ}\text{C}</math> below baseline.</li> </ul>	<ul style="list-style-type: none"> <li>•Any period in which mass steam flow for regeneration cycle <math>&gt;10\%</math> below baseline.</li> <li>•Any 3-hr period in which temperature <math>&gt;28^{\circ}\text{C}</math> below baseline.</li> </ul>	<ul style="list-style-type: none"> <li>•Any 3-hr period in which concentration level <math>&gt;20\%</math> above baseline.</li> </ul>
Performance Testing (PT)				
Test Method	<ul style="list-style-type: none"> <li>•Determine net heating value of gas combusted and calculate TRE using specified calculations and RM's 1 (1A), 2 (2A, 2C, 2D), 4 and 18 and other procedures, as applicable.</li> </ul>			
When Conducted	Initial and whenever process changes conducted.			
Specific Reporting	<ul style="list-style-type: none"> <li>•PT data and results</li> <li>•Semiannual report of exceedance and any recalculation of TRE index.</li> </ul>			
Specific Recordkeeping	<ul style="list-style-type: none"> <li>•Detailed requirements similar to data required for semiannual reports.</li> </ul>			

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51. The Cationic Monomer Plant (SN-P4-1) shall fully comply with all applicable requirements of the *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes* (see Appendix A).

In keeping with the exemption provided by 60.700(c)(5), the facility is only required to comply with 60.705(r). The permittee must submit a process design description as part of the initial report which must be retained for the life of the process. [§19.304 of Regulation 19 and 40 CFR Part 60 Subpart RRR]

52. The permittee shall test the carbon bed exit stream at SN-P4-1 for VOC. The testing shall be conducted within 180 days of permit issuance, and shall conform with the requirements of Plantwide Conditions 3 and 4. Compliance shall be determined by conformity of the test results with a limit of 0.5 lb/hr. This requirement was completed in March 2001 as a condition of Air Permit 860-AOP-R0. [§19.702 of Regulation 19 and 40 CFR Part 52 Subpart E]
53. The permittee shall test the exit vent of the Quat Plant water scrubber (SN-P4-7) for VOC. The testing shall be conducted within 180 days of the source's initial startup and shall conform with the requirements of Plantwide Conditions 3 and 4. Compliance shall be determined by conformity of the test results with a limit of 2.2 lb/hr. This requirement will apply upon completion of the P4-7 unit. [§19.702 of Regulation 19 and 40 CFR Part 52 Subpart E]
54. The permittee shall maintain records of VOC lb/hr emissions within the P4 Process Building area and associated storage tanks on a monthly basis. The monthly VOC total divided by the monthly operating hours shall be compared to the value permitted in Specific Condition 39 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]
55. The permittee shall maintain records of hazardous air pollutant (HAP) lb/hr emissions within the P4 Process Building area and associated storage tanks on a monthly basis. The monthly HAP totals divided by the monthly operating hours shall be compared to the values permitted in Specific Condition 40 for compliance purposes. The records and calculations shall be kept on site and made available to Department personnel upon request. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311,

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## **Fugitive Emissions**

### **Source Description**

Loading/Unloading for Plants P1, P2, and P3  
SN-FS-1

Loading and unloading losses in P1, P2, and P3 occur through evaporation at drums, rail tank cars, and tank trucks. A loading loss equation from the US EPA AP-42 was used to estimate these emissions.

Equipment Leaks for Plants P1, P2, and P3  
SN-FS-2

Fugitive emissions from processes and equipment at Ciba have been calculated using the SOCFI emission factors found in the EPA's guidance document, *Protocol for Equipment Leak Emissions Estimates*. The permittee submitted an equipment count with the fugitive calculations at the time of application submittal.

Wastewater Fugitives  
SN-FS-3

Some fugitive emissions at Ciba are generated by its wastewater treatment operation. The estimated water flow at the plant is 230,000 gallons per day. An in-house wastewater analysis has been performed at the plant, where VOC constituents were measured from samples taken over a five-day operating period. This analysis is the basis for permitted emission limits for wastewater fugitives.

Wastewater Fugitives – New Treatment Plant  
SN-FS-3A

The new plant is designed to process approximately 150 gallons per minute of raw effluent water. The plant design consists of five treatment sections. The raw process wastewater from the four site production units will be: 1) pH-adjusted; 2) equalized; 3) subjected to aerobic biological treatment; and 4) clarified by ultra-filtration. The fifth section, to be added at a later date, will thicken and mechanically dewater excess biological sludge before disposal.

Neutralization Tanks  
SN-FS-4

The open neutralization basin of the Wastewater Treatment System has been replaced with two closed tanks of 5,000 gallons each.

**Specific Conditions**

56. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Condition 58 and Plantwide Condition 7. [Regulation No. 19 §19.501 *et seq.* effective December 19, 2004, and 40 CFR Part 52, Subpart E]

**Table 17 – Maximum Criteria Pollutant Emission Rates from Fugitives**

SN	Description	Pollutant	lb/hr	ton/yr
FS-1	Loading/Unloading (P1, P2, P3)	VOC	2.3	10.0
FS-2	Equipment Leaks (P1, P2, P3)	VOC	22.8	99.7
FS-3	Wastewater Fugitives	VOC	46.8	205.0
FS-3A	Wastewater Fugitives – New Treatment Plant	VOC	2.4	10.4
FS-4	Neutralization Tanks	VOC	0.1	0.1

57. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of the requirements of Specific Condition 59 and Plantwide Condition 8. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8 4 203 as referenced by §8-4-304 and §8-4-311]

**Table 18 – Maximum Non-Criteria Pollutant Emission Rates from Fugitives**

SN	Description	Pollutant	lb/hr	ton/yr
FS-1	Loading/Unloading (P1, P2, P3)	Acetone	0.1	0.2
		Methanol <sup>HAP</sup>	0.80	3.60
		Methyl Methacrylate <sup>HAP</sup>	0.22	1.00
		Ethyl Acrylate <sup>HAP</sup>	0.34	1.50
FS-3	Wastewater Fugitives	Methyl Chloride <sup>HAP</sup>	0.26	1.14
		Methanol <sup>HAP</sup>	2.74	12.00
		Methyl Methacrylate <sup>HAP</sup>	1.30	5.68
FS-3A	Wastewater Fugitives – New Treatment Plant	Allyl Chloride <sup>HAP</sup>	0.12	0.53
		Methanol <sup>HAP</sup>	0.48	2.11
		Methyl Methacrylate <sup>HAP</sup>	0.16	0.71
FS-4	Neutralization Tanks	Methanol <sup>HAP</sup>	0.01	0.01

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58. The permittee shall maintain records of VOC emissions from SN-FS-1, SN-FS-2, SN-FS-3, SN-FS-3A, and SN-FS-4 on a monthly basis. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]
59. The permittee shall maintain records of hazardous air pollutant (HAP) emissions from SN-FS-1, SN-FS-2, SN-FS-3, SN-FS-3A, and SN-FS-4 on a monthly basis. The records and calculations shall be kept on site and made available to Department personnel upon request. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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## Miscellaneous Sources

### Source Description

Emergency Electrical Generator (for lab)  
SN-MI-1

The 180 hp diesel-fired generator, SN-MI-1, will be used to generate emergency power for the lab and is limited to 200 hours of maintenance and testing operation, annually.

Emergency Electrical Generator (By P-2)  
SN-MI-2

A 1500 hp diesel fired generator provides electrical generation in the event of a power outage or other emergency event. The generator is tested on a weekly basis to ensure operability.

Fire Protection Generator (WWTP/Instrumentation)  
SN-MI-3

A 1500 hp diesel fired generator provides electrical generation in the event of a power outage or other emergency event to the water pumps and to the plant instrumentation. The generator is tested on a weekly basis to ensure operability.

Electrical Generator (400 kW/600 HP – P4)  
SN-MI-4

A 600 hp diesel fired generator provides electrical generation in the event of a power outage or other emergency event to the water pumps and to the plant instrumentation. The generator is tested on a weekly basis to ensure operability.

### Specific Conditions

60. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of Specific Conditions 63, 65, 66, 68, and Plantwide Condition 7. [Regulation No. 19 §19.501 *et seq.* effective December 19, 2004, and 40 CFR Part 52, Subpart E]



**Table 19 – Maximum Hourly Criteria Pollutant Emission Rates from Miscellaneous Sources**

SN	Description	Pollutant	lb/hr	tpy
MI-1	Lab Emergency Electrical Generator, 180 hp	PM <sub>10</sub>	0.4	0.1
		SO <sub>2</sub>	0.4	0.1
		VOC	0.5	0.1
		CO	1.3	0.2
		NO <sub>x</sub>	5.6	0.6
MI-2	Emergency Electrical Generator (by P-2), 1500 hp	PM <sub>10</sub>	3.3	0.2
		SO <sub>2</sub>	3.1	0.2
		VOC	3.8	0.2
		CO	10.1	0.6
		NO <sub>x</sub>	46.5	2.4
MI-3	Fire Protection Generator (WWTP/Instrumentation), 1500 hp	PM <sub>10</sub>	3.3	0.2
		SO <sub>2</sub>	3.1	0.2
		VOC	3.8	0.2
		CO	10.1	0.6
		NO <sub>x</sub>	46.5	2.4
MI-4	Electrical Generator (400 kW/600 Hp-P4)	PM <sub>10</sub>	1.4	0.1
		SO <sub>2</sub>	1.3	0.1
		VOC	1.5	0.1
		CO	4.1	0.3
		NO <sub>x</sub>	18.6	1.0

61. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this condition will be demonstrated through fulfillment of Specific Conditions 63 and 65. [Regulation No. §18.801 effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 20 – Maximum Hourly Non-Criteria Pollutant Emission Rates from Miscellaneous Sources**

SN	Description	Pollutant	lb/hr	tpy
MI-1	Lab Emergency Electrical Generator	PM	0.4	0.1

SN	Description	Pollutant	lb/hr	tpy
MI-2	Emergency Electrical Generator (by P-2)	PM	3.3	0.2
MI-3	Fire Protection Generator (WWTP/Instrumentation)	PM	3.3	0.2
MI-4	Electrical Generator (400 kW/600 Hp-P4)	PM	1.4	0.1

62. The permittee shall not exceed 20% opacity at SN-MI-1, SN-MI-2, SN-MI-3, and SN-MI-4. Compliance with this limit shall be satisfied through the requirements of Specific Condition 63. [§19.503 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

63. Daily observations shall only be required when diesel generator use exceeds 24-hours per event. The visible emission observations shall be used as a method of compliance verification for the opacity limit at SN-MI-1, SN-MI-2, SN-MI-3, and SN-MI-4. The observations shall be conducted by personnel familiar with the facility's visible emissions. If during the daily observations, visible emissions are detected which appear to be in excess of the permitted opacity limit, the permittee shall:

- a) Take immediate action to identify the cause of the visible emissions.
- b) Implement all necessary corrective action.
- c) Reassess the visible emissions after corrective action is taken.
  - i. If excessive visible emissions are still detected, an opacity reading shall be conducted in accordance with EPA Reference Method 9. This reading shall be conducted by personnel trained and certified in the reference method. If the opacity reading exceeds the permitted limit, further corrective measures shall be taken.
  - ii. If no excessive visible emissions are detected, the incident shall be noted in the records as described below.

[§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

64. The permittee shall maintain records related to all visible emission observations and Method 9 Readings. The records shall be kept on site and made available to Department personnel upon request. The records shall contain the following items:

- 1) the date and time of each observation/reading.

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- 2) any observance of visible emissions appearing to be above permitted limits, or any Method 9 reading which indicates exceedance.
- 3) the cause of any observed exceedance of opacity limits, corrective action taken, and results of the reassessment.
- 4) The name of the person conducting the observation/reading.

[§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

65. The permittee shall not operate the Lab Emergency Electrical Generator (SN-MI-1) more than 200 hours per rolling 12-month period for testing and maintenance purposes. Records of testing/maintenance operation time shall be maintained on site, updated on a per-event basis, and made available to Department personnel upon request. Operation time required for actual emergency use is not restricted by this permit. [§19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6]
66. The permittee shall be limited to 2 hours per week and 100 hours per year of diesel generator testing and maintenance operating time, except that a 4-hour testing and maintenance event may be conducted once per year each for SN-MI-2, SN-MI-3, and SN-MI-4. Records of generator use for testing/maintenance shall be maintained on site, updated on a per-event basis, and made available to Department personnel upon request. Operation time required for actual emergency use is not restricted by this permit. [§19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6,
67. The permittee shall maintain a copy of the manufacturer's specification sheet for the Lab Emergency Electrical Generator (SN-MI-1), Emergency Electrical Generator (SN-MI-2), the Fire Protection Generator (SN-MI-3), and the Electrical Generator (SN-MI-4). This information shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]
68. The permittee shall calculate and maintain records of all criteria pollutant emissions from SN-MI-1, SN-MI-2, SN-MI-3, and SN-MI-4 on a monthly basis. The records and calculations shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

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### **Section V: COMPLIANCE PLAN AND SCHEDULE**

Ciba Specialty Chemicals Corporation will continue to operate in compliance with those identified regulatory provisions. The facility will examine and analyze future regulations that may apply and determine their applicability with any necessary action taken on a timely basis.

### **Section VI: PLANT WIDE CONDITIONS**

1. The permittee will notify the Director in writing within thirty (30) days after commencing construction, completing construction, first placing the equipment and/or facility in operation, and reaching the equipment and/or facility target production rate. [Regulation No. 19 §19.704, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
2. If the permittee fails to start construction within eighteen months or suspends construction for eighteen months or more, the Director may cancel all or part of this permit. [Regulation No.19 §19.410(B) and 40 CFR Part 52, Subpart E]
3. The permittee must test any equipment scheduled for testing, unless stated in the Specific Conditions of this permit or by any federally regulated requirements, within the following time frames: (1) New Equipment or newly modified equipment within sixty (60) days of achieving the maximum production rate, but no later than 180 days after initial start-up of the permitted source or (2) operating equipment according to the time frames set forth by the Department or within 180 days of permit issuance if no date is specified. The permittee must notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. The permittee will submit the compliance test results to the Department within thirty (30) days after completing the testing. [Regulation No.19 §19.702 and/or Regulation No. 18 §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
4. The permittee must provide: [Regulation No.19 §19.702 and/or Regulation No.18 §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
  - a. Sampling ports adequate for applicable test methods;
  - b. Safe sampling platforms;
  - c. Safe access to sampling platforms; and
  - d. Utilities for sampling and testing equipment.
5. The permittee must operate the equipment, control apparatus and emission monitoring equipment within the design limitations. The permittee will maintain the equipment in good condition at all times. [Regulation No.19 §19.303 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
6. This permit subsumes and incorporates all previously issued air permits for this facility. [Regulation No. 26 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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- The permittee shall maintain records of plantwide criteria emissions on a monthly basis. These records must be kept on site and made available to Department personnel upon request. Compliance shall be based upon a 12-month rolling total to comply with the below table. Calculations shall be based on boiler fuel usage, diesel combustion, reactor kinetic equations, estimations from the TANKS program, and fugitive emissions caused by unloading, wastewater treatment, and equipment leaks. These records shall be included in the semiannual report outlined in General Provision 7. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

**Table 21 – Total Plantwide Emission Limits**

Plantwide Emission Limit	
Pollutant	tpy
PM <sub>10</sub>	4.7
SO <sub>2</sub>	18.8
VOC	536.5
CO	42.9
NO <sub>x</sub>	69.7

- The permittee shall maintain records of plantwide HAP emissions on a monthly basis. These records must be kept on site and made available to Department personnel upon request. Compliance shall be based upon a 12-month rolling total to comply with the table below. Calculations shall be based on boiler fuel usage, reactor kinetic equations, estimations from the TANKS program, and fugitive emissions caused by unloading, wastewater treatment, and equipment leaks. These records shall be included in the semiannual report outlined in General Provision 7. [§18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

**Table 22 – Total Plantwide HAP Emission Limits**

Plantwide Emission Limit	
Pollutant	tpy
Acetone	1.7
Acrylamide <sup>HAP</sup>	0.02
Acrylic Acid <sup>HAP</sup>	0.61
Allyl Chloride <sup>HAP</sup>	18.25
Epichlorohydrin <sup>HAP</sup>	0.05
Ethyl Acrylate <sup>HAP</sup>	8.40
Methanol <sup>HAP</sup>	41.08
Methyl Methacrylate <sup>HAP</sup>	16.20
Methyl Chloride <sup>HAP</sup>	22.04

9. The permittee shall be responsible for complying with all applicable requirements of NSPS-Kb at any tank at the facility if a volatile organic liquid meeting the vapor pressure and quantity thresholds outlined in NSPS-Kb is stored in the tank. These vapor pressure and quantity thresholds are presented in the following table for reference:

Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.

**Table 23 - NSPS Kb Summary of Requirements**

Vessel Capacity (gallons)	VOL Pressure Limit	Required Control Device	Summary of Testing & Procedures	Recordkeeping & Reporting	Monitoring of Operations
>=19,813 but <39,889 60.116(b)(c)	>=2.18 psia but < 4.00 psia	None	None	None	Items A, B, C, & D
>=19,813 but <39,889	>=2.18 psia	None	None	None	Items A & B
>=19,813 but <39,890 60.112b(a)	>= 4.00 psia but < 11.11 psia	IFR, EFR, or Closed Vent System, or EPA Alternative	See Below	See Below	Items A, B, & C

Vessel Capacity (gallons)	VOL Pressure Limit	Required Control Device	Summary of Testing & Procedures	Recordkeeping & Reporting	Monitoring of Operations
>=19,813 60.112(b)(b)	>= 11.11 psia	Closed VentSystem or EPA Alternative	See Below	See Below	Items A & B
>=39,890 60.116(b)(c)	>=0.5 psia	None	None	None	Items A & B
>=39,890	>=0.5 psia but < 0.75 psia	None	None	None	Items A, B, C, & D
>=39,890 60.112b(a)	>= 0.75 psia but <11.11 psia	IFR, EFR, or Closed Vent System, or EPA Alternative	See Below	See Below	Items A, B, & C

### DESCRIPTION OF CONTROL DEVICE

**IFR:** Internal Floating Roof, in conjunction with a fixed roof. The IFR is equipped with a liquid-mounted or mechanical shoe primary seal, either flexible fabric sleeve seals on pipe columns or gasketed sliding covers on built-up or pipe columns, slit fabric membranes or sample wells, and gasketed covers on roof fittings.

**EFR:** External Floating Roof, equipped with mechanical shoe primary seals and a continuous rim-mounted secondary seal, with both seals meeting certain minimum gap requirements, and gasketed covers on roof fittings.

**Closed Vent System and Control Device:** 95% effective control device

**Alternative means of emission limitation:** May be approved by EPA after notice and an opportunity for public hearing.

### SUMMARY OF TESTING AND PROCEDURES

**Closed Vent System:** Submit a design specification and operation and maintenance plan, which specifies maintenance, and operating practices.

**Alternate Means Approved by EPA:** Specified by EPA when approved.

**External Floating Roof:** Inspect seals prior to filling. Also, gap measurements between the seal and vessel wall are required to ensure equipment is properly maintained and operated. Gap measurement of primary and secondary seals are required within 60 days of introducing liquid to



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the vessel. Every 12 months, secondary gap measurements must be conducted. Every five years, primary seal gap measurements must be conducted. Measured gaps that exceed limitations must be repaired within 45 days, or the vessel must be emptied. Notify EPA 30 days prior to gap measurements being conducted and also prior to filling and refilling of vessel.

**Fixed Roof with IFR:** Required to inspect to ensure that equipment is maintained and properly operated. Floating roof and seals are to be inspected prior to filling the vessel to ensure there are no holes in the IFR and that there are no holes, tears, or other openings in the seal from the fixed roof. If there are holes in the IFR or if liquid has accumulated on the roof, then repairs can be made within 45 days or the vessel can be emptied within 45 days. Every ten years, the vessel must be emptied to inspect the IFR and primary and secondary seals. All defects must be repaired before the vessel is refilled. Notify EPA 30 days prior to filling and refilling the vessel.

## **SUMMARY OF MONITORING OPERATIONS**

**Item A:** Requirement to keep copies of all records required by Items C and D for two years. The record required by Item B is to be kept for the life of the source.

**Item B:** Record showing the dimension of the storage vessel and an analysis showing the capacity of the vessel.

**Item C:** Maintain a record of the VOL stored, the period of storage and the maximum true vapor pressure of that VOL during the respective storage period. Vessels with closed vent systems and control device are exempt.

**Item D:** Notify EPA within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range. Vessels with Closed Vent System and Control Device are EXEMPT.

## **AFFECTED FACILITY DEFINED**

The affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 19,813 gallons that is used to store volatile organic liquids (VOLs) for which construction, reconstruction, or modification is commenced after July 23, 1984.

## **EXCEPTIONS**

1. Vessels at coke oven by-product plants.
2. Pressure vessels designed to operate in excess of 204.9 kPa (29.69 psia) and without emissions to the atmosphere.
3. Vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships.

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4. Vessels with a design capacity less than or equal to 420,000 gal. Used for petroleum or condensate stored, processed, or treated prior to custody transfer.
5. Vessels located at bulk gasoline plants.
6. Storage vessels located at gasoline service stations.
7. Vessels used to store beverage alcohol.

[§19.304 of Regulation 19 and 40 CFR Part 60 Subpart Kb]

10. The permittee shall submit a permit modification application demonstrating how Ciba Specialty Chemicals Corporation will comply with 40 CFR Part 63, Subpart FFFF – *National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Manufacturing* or the permittee will submit a notification citing how the current permit demonstrates compliance with the subpart. The application or notification must be submitted no later than six months before the compliance date. The compliance date for this subpart is May 10, 2008 (six months prior, November 10, 2007). [§19.304 of Regulation 19, 40 CFR Part 63, Subpart FFFF, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
11. The permittee shall submit a permit modification application demonstrating how Ciba Specialty Chemicals Corporation will comply with 40 CFR Part 63, Subpart DDDDD –or the permittee will submit a notification citing how the current permit demonstrates compliance with the subpart. The application or notification must be submitted no later than six months before the compliance date. The compliance date for this subpart is September 13, 2007 (six months prior, March 13, 2007). [§19.304 of Regulation 19, 40 CFR Part 63, Subpart DDDDD, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
12. The permittee may, in the event of a process shutdown, record vent condenser and scrubber logs as “down” once per shift. The Department understands that such shutdowns are temporary and once normal operations resumes, the current permitted conditions will apply. The facility agrees that the appropriate chilled water and scrubber systems will be brought back online before production operations resume. [§19.303 of Regulation #19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
13. The permittee may maintain their compliance logs in a spreadsheet, database, or other well organized format. [§19.705 of Regulation 19 and 40 CFR Part 52 Subpart E]

#### **Title VI Provisions**

14. The permittee must comply with the standards for labeling of products using ozone-depleting substances. [40 CFR Part 82, Subpart E]
  - a. All containers containing a class I or class II substance stored or transported, all products containing a class I substance, and all products directly manufactured with a class I

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- substance must bear the required warning statement if it is being introduced to interstate commerce pursuant to §82.106.
- b. The placement of the required warning statement must comply with the requirements pursuant to §82.108.
  - c. The form of the label bearing the required warning must comply with the requirements pursuant to §82.110.
  - d. No person may modify, remove, or interfere with the required warning statement except as described in §82.112.
15. The permittee must comply with the standards for recycling and emissions reduction, except as provided for MVACs in Subpart B. [40 CFR Part 82, Subpart F]
- a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to §82.156.
  - b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158.
  - c. Persons performing maintenance, service repair, or disposal of appliances must be certified by an approved technician certification program pursuant to §82.161.
  - d. Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to §82.166. (“MVAC-like appliance” as defined at §82.152.)
  - e. Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to §82.156.
  - f. Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.
16. If the permittee manufactures, transforms, destroys, imports, or exports a class I or class II substance, the permittee is subject to all requirements as specified in 40 CFR Part 82, Subpart A, Production and Consumption Controls.
17. If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.

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The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

18. The permittee can switch from any ozone-depleting substance to any alternative listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, "Significant New Alternatives Policy Program".

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**Section VII: INSIGNIFICANT ACTIVITIES**

The following sources are insignificant activities. Any activity that has a state or federal applicable requirement is a significant activity even if this activity meets the criteria of §304 of Regulation 26 or listed in the table below. Insignificant activity determinations rely upon the information submitted by the permittee in an application dated January 16, 2005.

**Table 24 - Insignificant Activities**

<b>Description</b>	<b>Category</b>
Acetone Boilouts	A-13
Final Product Drumming and Shipping	A-13

Pursuant to §26.304 of Regulation 26, the Department determined the emission units, operations, or activities contained in Regulation 19, Appendix A, Group B, to be insignificant activities. Activities included in this list are allowable under this permit and need not be specifically identified.

### Section VIII: GENERAL PROVISIONS

1. Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation No. 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*). Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute.[40 CFR 70.6(b)(2)]
2. This permit shall be valid for a period of five (5) years beginning on the date this permit becomes effective and ending five (5) years later. [40 CFR 70.6(a)(2) and §26.701(B) of the Regulations of the Arkansas Operating Air Permit Program (Regulation 26), effective August 10, 2000]
3. The permittee must submit a complete application for permit renewal at least six (6) months before permit expiration. Permit expiration terminates the permittee's right to operate unless the permittee submitted a complete renewal application at least six (6) months before permit expiration. If the permittee submits a complete application, the existing permit will remain in effect until the Department takes final action on the renewal application. The Department will not necessarily notify the permittee when the permit renewal application is due. [Regulation No. 26 §26.406]
4. Where an applicable requirement of the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.* (Act) is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, the permit incorporates both provisions into the permit, and the Director or the Administrator can enforce both provisions. [40 CFR 70.6(a)(1)(ii) and Regulation No. 26 §26.701(A)(2)]
5. The permittee must maintain the following records of monitoring information as required by this permit. [40 CFR 70.6(a)(3)(ii)(A) and Regulation No. 26 §26.701(C)(2)]
  - a. The date, place as defined in this permit, and time of sampling or measurements;
  - b. The date(s) analyses performed;
  - c. The company or entity performing the analyses;
  - d. The analytical techniques or methods used;

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- e. The results of such analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
6. The permittee must retain the records of all required monitoring data and support information for at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [40 CFR 70.6(a)(3)(ii)(B) and Regulation No. 26 §26.701(C)(2)(b)]
7. The permittee must submit reports of all required monitoring every six (6) months. If permit establishes no other reporting period, the reporting period shall end on the last day of the anniversary month of the initial Title V permit. The report is due within thirty (30) days of the end of the reporting period. Although the reports are due every six months, each report shall contain a full year of data. The report must clearly identify all instances of deviations from permit requirements. A responsible official as defined in Regulation No. 26 §26.2 must certify all required reports. The permittee will send the reports to the address below: [40 C.F.R. 70.6(a)(3)(iii)(A) and §26.701(C)(3)(a) of Regulation #26]

Arkansas Department of Environmental Quality  
Air Division  
ATTN: Compliance Inspector Supervisor  
Post Office Box 8913  
Little Rock, AR 72219

8. The permittee will report to the Department all deviations from permit requirements, including those attributable to upset conditions as defined in the permit. For all upset conditions (as defined in Regulation 19.601), the permittee will make an initial report to the Department by the next business day after the discovery of the occurrence. The initial report may be made by telephone and shall include:
- a. The facility name and location,
    - i. The process unit or emission source deviating from the permit limit,
    - ii. The permit limit, including the identification of pollutants, from which deviation occurs,
    - iii. The date and time the deviation started,
    - iv. The duration of the deviation,
    - v. The average emissions during the deviation,

- vi. The probable cause of such deviations,
- vii. Any corrective actions or preventive measures taken or being taken to prevent such deviations in the future, and
- viii. The name of the person submitting the report.

The permittee will make a full report in writing to the Department within five (5) business days of discovery of the occurrence. The report must include, in addition to the information required by the initial report, a schedule of actions taken or planned to eliminate future occurrences and/or to minimize the amount the permit's limits were exceeded and to reduce the length of time the limits were exceeded. The permittee may submit a full report in writing (by facsimile, overnight courier, or other means) by the next business day after discovery of the occurrence, and the report will serve as both the initial report and full report.

- b. For all deviations, the permittee will report such events in semi-annual reporting and annual certifications required in this permit. This includes all upset conditions reported in 8a. above. The semi-annual report must include all the information as required in the initial and full report required in 8a. [40 CFR 70.6(a)(3)(iii)(B), Regulation No. 26 §26.701(C)(3)(b), Regulation No. 19 §19.601 and §19.602]
9. If any provision of the permit or the application thereof to any person or circumstance is held invalid, such invalidity will not affect other provisions or applications hereof which can be given effect without the invalid provision or application, and to this end, provisions of this Regulation are declared to be separable and severable. [40 CFR 70.6(a)(5), §26.701(E) of Regulation No. 26, and A.C.A. §8-4-203, as referenced by §8-4-304 and §8-4-311]
  10. The permittee must comply with all conditions of this Part 70 permit. Any permit noncompliance with applicable requirements as defined in Regulation No. 26 constitutes a violation of the Clean Air Act, as amended, 42 U.S.C. §7401, *et seq.* and is grounds for enforcement action; for permit termination, revocation and reissuance, for permit modification; or for denial of a permit renewal application. [40 CFR 70.6(a)(6)(i) and Regulation No. 26 §26.701(F)(1)]
  11. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit. [40 CFR 70.6(a)(6)(ii) and Regulation No. 26 §26.701(F)(2)]
  12. The Department may modify, revoke, reopen and reissue the permit or terminate the permit for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [40 CFR 70.6(a)(6)(iii) and Regulation No. 26 §26.701(F)(3)]



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13. This permit does not convey any property rights of any sort, or any exclusive privilege. [40 CFR 70.6(a)(6)(iv) and Regulation No. 26 §26.701(F)(4)]
14. The permittee must furnish to the Director, within the time specified by the Director, any information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee must also furnish to the Director copies of records required by the permit. For information the permittee claims confidentiality, the Department may require the permittee to furnish such records directly to the Director along with a claim of confidentiality. [40 CFR 70.6(a)(6)(v) and Regulation No. 26 §26.701(F)(5)]
15. The permittee must pay all permit fees in accordance with the procedures established in Regulation No. 9. [40 CFR 70.6(a)(7) and Regulation No. 26 §26.701(G)]
16. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes provided for elsewhere in this permit. [40 CFR 70.6(a)(8) and Regulation No. 26 §26.701(H)]
17. If the permit allows different operating scenarios, the permittee will, contemporaneously with making a change from one operating scenario to another, record in a log at the permitted facility a record of the operational scenario. [40 CFR 70.6(a)(9)(i) and Regulation No. 26 §26.701(I)(1)]
18. The Administrator and citizens may enforce under the Act all terms and conditions in this permit, including any provisions designed to limit a source's potential to emit, unless the Department specifically designates terms and conditions of the permit as being federally unenforceable under the Act or under any of its applicable requirements. [40 CFR 70.6(b) and Regulation No. 26 §26.702(A) and (B)]
19. Any document (including reports) required by this permit must contain a certification by a responsible official as defined in Regulation No. 26 §26.2. [40 CFR 70.6(c)(1) and Regulation No. 26 §26.703(A)]
20. The permittee must allow an authorized representative of the Department, upon presentation of credentials, to perform the following: [40 CFR 70.6(c)(2) and Regulation No. 26 §26.703(B)]
  - a. Enter upon the permittee's premises where the permitted source is located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit;
  - b. Have access to and copy, at reasonable times, any records required under the conditions of this permit;

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- c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
  - d. As authorized by the Act, sample or monitor at reasonable times substances or parameters for assuring compliance with this permit or applicable requirements.
21. The permittee will submit a compliance certification with the terms and conditions contained in the permit, including emission limitations, standards, or work practices. The permittee must submit the compliance certification annually within 30 days following the last day of the anniversary month of the initial Title V permit. The permittee must also submit the compliance certification to the Administrator as well as to the Department. All compliance certifications required by this permit must include the following: [40 CFR 70.6(c)(5) and Regulation No. 26 §26.703(E)(3)]
- a. The identification of each term or condition of the permit that is the basis of the certification;
  - b. The compliance status;
  - c. Whether compliance was continuous or intermittent;
  - d. The method(s) used for determining the compliance status of the source, currently and over the reporting period established by the monitoring requirements of this permit; and
  - e. Such other facts as the Department may require elsewhere in this permit or by §114(a)(3) and §504(b) of the Act.
22. Nothing in this permit will alter or affect the following: [Regulation No. 26 §26.704(C)]
- a. The provisions of Section 303 of the Act (emergency orders), including the authority of the Administrator under that section;
  - b. The liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance;
  - c. The applicable requirements of the acid rain program, consistent with §408(a) of the Act or,
  - d. The ability of EPA to obtain information from a source pursuant to §114 of the Act.
23. This permit authorizes only those pollutant-emitting activities addressed in this permit. [A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

## **APPENDIX A**

NSPS Subparts

Dc, Kb, NNN, RRR

NESHAP Subparts

FFFF, DDDDD

## **APPENDIX B**

### Summary of Control Equipment Parameters

## SUMMARY OF CONTROL EQUIPMENT PARAMETERS

Scrubbers				
Source Number	Unit Description	Scrubbing Fluid	Minimum Concentration or pH	Minimum Flow (gpm)
SN-P1-1	Reactor 104 for TAAC	Caustic (NaOH)	10 wt%	20
SN-P1-9	Reactors 104, 105, and 107 for mDMDAC	Caustic (NaOH)	10 wt%	20
SN-P2-1	R-101 Scrubber	(Meth) Acrylate Ester	95 wt%	15
SN-P2-5	R-109 Scrubber	(Meth) Acrylate Ester	95 wt%	15
SN-P3-1	R-110, R-112, R-113, R-115, and R-116 Scrubber	Caustic (NaOH)	pH 12	40
SN-P4-1	Cationic Monomer Plant Scrubber	Caustic (NaOH) followed by Acid (H <sub>2</sub> SO <sub>4</sub> ) Solution	3 wt% Caustic 3 wt% Acid	40 Caustic 40 Acid
SN-P4-7	Quat Plant Scrubber	Caustic	2% Caustic	3

Chilled Vent Condensers		
Source Number	Unit Description	Maximum Glycol/Water Outlet Temperature (°F)
SN-P1-9	Chilled Vent Condenser	35
SN-P3-10	V-1212 Chilled Vent Condenser	35
	V-1213 Chilled Vent Condenser	
	VE-643 Chilled Vent Condenser	
	VE-644 Chilled Vent Condenser	
	VE-645 Chilled Vent Condenser	
	VE-646 Chilled Vent Condenser	
SN-P3-11	MeOH Recovery Chilled Vent Condenser	35

