STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0762-AOP-R26 AFIN: 14-00028

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Albemarle Corporation - South Plant
Highway 79, Approximately 6 Miles South of Magnolia
Magnolia, Arkansas 71753

3. PERMIT WRITER:

Elliott Marshall

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Other Basic Inorganic Chemical Manufacturing
NAICS Code: 325180

5. ALL SUBMITTALS:

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
6/30/2017	Minor Mod	-Increase Clear Completion Fluids production rates -Remove R-21 Vent Scrubber South -Correct Br_2+HBr total allowable emissions

6. REVIEWER'S NOTES:

Albemarle Corporation – South Plant (AFIN: 14-00028) owns and operates a chemical manufacturing facility (P.O. Box 729) on Highway 79, approximately seven miles south of Magnolia, Arkansas 71753. Albemarle submitted a minor mod application to:

- Increase Clear Completion Fluids (CCF) $ZnBr_2$ production rates which will result in additional methanol emissions from the CCF Reactor (SN-CB-23).

- Furthermore, the facility is also proposing to bypass the control device (SN-CB-16) after the reactor vapor temperature reaches 245 ^{o}F. Emissions will be routed to scrubber SN-CB-16 at all temperatures below 245 ^{o}F; once a temperature of 245 ^{o}F has been achieved the emissions will bypass the scrubber (SN-CB-16) and be vented by an automated valve to the atmosphere via the CCF Reactor Vent (SN-CB-23). The number of batches under this scenario will be limited to 185 batches per year.

- Remove the Alternate Operating Scenario (Current Specific Conditions #28 through #35) from the permit.

- Remove R-21 Vent Scrubber (South) (SN-CB-02) from the permit. All references to this control equipment will be removed from the current conditions.

- The Br_2+HBr total allowable emissions have been corrected to 3.72 lb/hr and 16.32 tpy to reflect changes made in permit 0762-AOP-R25.

The proposed modification will result in an overall emission decrease of: -22.8 tpy VOC, -1.1 tpy Ammonia, -0.88 tpy Bromide, -0.24 tpy Hydrogen Bromide, -0.55 tpy Methanol, -9.18 tpy Methyl Bromide, and -16.53 tpy Total HAP.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility was last inspected June 14, 2017. No compliance issues were discovered.

8. PSD APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N

b) Is the facility categorized as a major source for PSD? Y
- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes, explain why this permit modification is not PSD.

The net emissions are decreasing.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD only]
Facility	PM_{10}, SO_2, VOC, CO, NO_X	PSD

Source	Pollutant	Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD only]
Facility	VOC	40 CFR Part 82 – Standards for the Protection of Stratospheric Ozone
Facility	PM/PM_{10}	40 CFR Part 61, Subpart M – National Emission Standard for Asbestos
AB-15	VOC/HAP	40 CFR Part 63, Subpart A – National Emission Standards for Hazardous Air Pollutants for Source Categories, General Provisions
AB-15 TB-11 TB-25 TB-29 TB-30 WW-01	VOC/HAP	40 CFR Part 63, Subpart F – National Emission Standards for Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry 40 CFR Part 63, Subpart G – National Emission Standards for Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater 40 CFR Part 63, Subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
NC-23 Process MeBr Scenario	Ozone Depleting Substances	40 CFR Part 82, Part A – Protection of Stratospheric Ozone, Production and Consumption Controls
NC-23 Process MeBr Scenario	Ozone Depleting Substances	40 CFR Part 82, Subpart E – Protection of Stratospheric Ozone, The Labeling of Products Using Ozone-Depleting Substances
NC-17 CMPU	VOC/HAP	40 CFR Part 63, Subpart A – National Emission Standards for Hazardous Air Pollutants for Source Categories, General Provisions
NC-17 CMPU	VOC/HAP	40 CFR Part 63, Subpart F – National Emission Standards for Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry
NC-17 CMPU	VOC/HAP	40 CFR Part 63, Subpart G – National Emission Standards for Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater
NC-17 CMPU	VOC/HAP	40 CFR Part 63, Subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
21-01 21-02	VOC/HAP	40 CFR Part 61, Subpart A – National Emission Standards for Organic Hazardous Air Pollutants, General Provisions
21-01 21-02	VOC/HAP	40 CFR Part 61, Subpart J – National Emission Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene
21-01 21-02	VOC/HAP	40 CFR Part 61, Subpart V – National Emission Standards for Equipment Leaks (Fugitive Emission Sources)

Source	Pollutant	Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD only]
21-01 21-02	VOC/HAP	40 CFR Part 61, Subpart Y – National Emission Standards for Benzene Emissions from Benzene Storage Vessels
21-01 21-02	VOC/HAP	40 CFR Part 61, Subpart FF – National Emission Standards for Benzene Waste Operations
MS-05	VOC/HAP	40 CFR Part 63, Subpart JJ – National Emission Standards for Wood Furniture Manufacturing Operations
Facility	Ozone Depleting Substances	40 CFR Part 82, Subpart E – Protection of Stratospheric Ozone, The Labeling of Products Using Ozone-Depleting Substances
MCPU's: DMTDA NC-12 NC-15 NC-17 NC-21 NC-23	VOC/HAP	40 CFR Part 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing and Miscellaneous Coating Manufacturing
CCF All Ethylene Glycol Storage	VOC/HAP	40 CFR Part 63, Subpart EEEE – National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Facility/Engines	VOC, CO, NO_X, HAPs	40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR Part 60, Subpart JJJJ – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. 40 CFR Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Facility/Boilers and Process Heaters	HAPS, CO, Filterable PM	40 CFR Part 63, Subpart DDDDD

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

b) Non-Criteria Pollutants:

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Methanol	262.086	28.83	62.82	No

The facility also emits a number of non-criteria pollutants from incomplete combustion and the processing of brine and sour gas extracted from wells operated by the facility. Based on Department procedures for review of non-criteria pollutants those emissions are below thresholds of concern.

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Methanol	2620.86	803.75	Yes

c) H_2S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H_2S Standards N
If exempt, explain:_____

The proposed changes included in the renewal application do not affect the basis of the previous hydrogen sulfide evaluation. Available information indicates re-evaluation of hydrogen sulfide emissions is not warranted at this time. The results of the previous evaluation are listed below.

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H_2S	20 parts per million (5-minute average*)	110.0	Y
	80 parts per billion (8-hour average) residential area	26.2	Y
	100 parts per billion (8-hour average) nonresidential area		

*To determine the 5-minute average use the following equation

$Cp = Cm\ (t_m/t_p)^{0.2}$ where

Cp = 5-minute average concentration
Cm = 1-hour average concentration
t_m = 60 minutes
t_p = 5 minutes

12. CALCULATIONS:

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
BR-01	Testing	1.5 lb/hr VOC	Scrubber		99% Control for Bromine and Chlorine
BR-04	Testing	3.81 lb/hr VOC			
BR-08	TANKS	0.04 lb/hr HCl			
BR-09	Mass Balance	0.02 lb/hr HBr 0.02 lb/hr Br_2			
BR-12	Testing	0.10 lb/hr Cl_2 0.30 lb/hr Br_2	Scrubber	99.9	
BR-14	SOCMI	0.50 lb/hr VOC			
BR-15	Testing	1.63 lb/hr Halogens			
SL-01	AP-42	See Section 14.1			
SL-02	Mass Balance	0.12 lb/hr VOC			
SR-01	AP-42	See Section 14.1			
SR-02	SOCMI	0.50 lb/hr VOC			
SR-03	Mass Balance	0.42 lb/hr SO_2 0.22 lb/hr H_2S			8,760 hr/yr
CB-01	Mass Balance	0.1 lb/hr PM_{10}			
CB-04	Mass Balance	26.00 lb/hr VOC			
CB-16	Mass Balance	0.27 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
CB-17	SOCMI	1.80 lb/hr VOC			
CB-18	Mass Balance	0.1 lb/hr PM_{10} 0.06 lb/hr HAP			Baghouse, control is included in emission rate
CB-21	Mass Balance	9.35E-05 lb/hr HAP			
CB-22a	Mass Balance	6.92E-06 lb/hr HAP			
CB-22b	Mass Balance	6.92E-06 lb/hr HAP			
CB-23	Mass Balance	1.97E-03 lb/hr HAP			
CB-23	Mass Balance	5.9 lb MeOH/Batch			Alternate scenario limited to 185 batches/yr
DE-01	Mass Balance	0.5 lb/hr VOC			ADMA Brine Storage Tank (Additional ADMA Storage Scenario)
AD-01	TANKS	0.16 lb/hr VOC			
AD-02	TANKS	0.16 lb/hr VOC			
AD-03	TANKS	0.26 lb/hr VOC			
AD-05	VOC TANKS HCl Mass Balance	0.30 lb/hr VOC 0.10 lb/hr HCl			
AD-07	TANKS	0.05 lb/hr VOC			
AD-08	TANKS	0.05 lb/hr VOC			
AD-09	TANKS	0.05 lb/hr VOC			
AD-10	TANKS	0.26 lb/hr VOC			
AD-11	TANKS	0.26 lb/hr VOC			
AD-12	TANKS	0.26 lb/hr VOC			
AD-13	TANKS	0.26 lb/hr VOC			
AD-14	TANKS	0.26 lb/hr VOC			
AD-15	TANKS	0.26 lb/hr VOC			
AD-16	AP-42 Sec. 1.4	See Tables 1.4-1 and 1.4-2	None	None	3.55 MMBtu/hr
AD-17	TANKS	0.26 lb/hr VOC			
AD-18	TANKS	0.26 lb/hr VOC			
AD-20	TANKS	0.16 lb/hr VOC			
AD-21	TANKS	3.45 lb/hr VOC			
AD-23	TANKS	0.03 lb/hr VOC			
AD-24	TANKS	0.26 lb/hr VOC			
AD-25	TANKS	0.26 lb/hr VOC			
AD-26	AP-42	See Section 14.1			
AD-27	TANKS	0.26 lb/hr VOC			
AD-28	TANKS	0.08 lb/hr VOC			
AD-29	TANKS	0.08 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
AD-32	AP-42 Section 1.4	0.04 lb/hr PM_{10} 0.01 lb/hr SO_2 0.03 lb/hr VOC 0.38 lb/hr CO 0.45 lb/hr NO_X			4.62 MMBtu/hr
AD-35	See Application	0.22 lb/hr PM_{10} 0.15 lb/hr SO_2 1.22 lb/hr VOC 0.06 lb/hr CO 0.70 lb/hr NO_X			
AD-36	SOCMI	4.13 lb/hr VOC			
AD-37	TANKS	0.05 lb/hr VOC			
AD-39	Mass Balance	0.1 lb/hr VOC			ADMA Additional Storage Alternate Operating Scenario Loadout Emissions
AD-40	Mass Balance	0.26 lb/hr VOC			
AB-15	Testing	1.20 lb/hr VOC			
AB-16	SOCMI	7.50 lb/hr VOC			
AB-18	EPA Water9	1.44 lb/hr VOC 0.34 lb/hr MeCl			
DB-01	Mass Balance	0.44 lb/hr Halogens 0.10 lb/hr HCl	Scrubber		Includes assumed scrubber efficiency of 99.9% Can also treat HCl emissions from DB-07
DB-02	TANKS	0.10 lb/hr VOC			
DB-04	Manufacturer Specification (combustion) Mass Balance (PM)	1.8 lb/hr PM_{10} 0.14 lb/hr SO_2 0.96 lb/hr VOC 3.6 lb/hr CO 1.6 lb/hr NO_X			
DB-05	Mass Balance	0.3 lb/hr PM_{10}			
DB-06	Mass Balance	0.3 lb/hr PM_{10}			
DB-07	Mass Balance	0.10 lb/hr VOC			
DB-08	Mass Balance	1.1 lb/hr PM_{10}			
DB-16	SOCMI	1.40 lb/hr VOC			
DB-17	Mass Balance	0.10 lb/hr Halogens			
DB-18	Mass Balance	0.06 g/ft^3 @ 460 ft^3/min		99.9%	
DB-19	Mass Balance	1.00 lb/hr Br_2 +HBr		40%	
DB-22	Mass Balance	160 ft^3/min 2 g solids/ft^3	Fabric filter	99.93%	

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
TB-01	TANKS	0.26 lb/hr VOC			
TB-04 (NC-22)	Mass Balance	0.90 lb/hr PM_{10} 0.21 lb/hr VOC			
TB-05	Mass Balance	0.45 lb/hr PM_{10}			
TB-08 (NC-22)	Mass Balance	0.30 lb/hr PM_{10}			
TB-11	Mass Balance	0.1 lb/hr VOC			ADMA Brine Storage Tank (Additional ADMA Storage Scenario)
TB-14 (Stabrom)	Mass Balance	0.30 lb/hr Halogens			
TB-14 (NC-22)	Mass Balance	0.10 lb/hr Halogens			
TB-29 (Stabrom)	SOCMI	0.30 lb/hr Halogens			
TB-29 (NC-22)	SOCMI	1.45 lb/hr VOC			
TB-41 (NC-22)	Mass Balance	18.40 lb/hr VOC			
TB-42 (NC-22C)	TANKS	0.03 lb/hr HBr			
TB-43 (NC-22)	Mass Balance	0.63 lb/hr VOC			
TB-45 (NC-22)	TANKS	1.174E-04 lb/hr Hydrazine			
TB-47	Mass Balance	50.5 lb/hr VOC 0.40 lb/hr $MeCl_2$			
TB-48	Mass Balance	0.20 lb/hr PM/PM_{10}	Fabric Filter	99.9%	
TB-49	Mass Balance	0.30 lb/hr PM/PM_{10}			
15-02	Mass Balance	0.20 lb/hr Halogens	Scrubber	99.99%	
15-12	AP-42	See Section 1.4			
15-13	AP-42	0.07 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
15-14A 15.14B	AP-42 Section 1.4	0.01 lb/hr PM_{10} 0.01 lb/hr SO_2 0.01 lb/hr VOC 0.08 lb/hr CO 0.10 lb/hr NO_X			1.0 MMBtu/hr, each
15-15	SOCMI	4.23 lb/hr VOC			
15-16	Mass Balance	1.20 lb/hr VOC			
15-17	Mass Balance	0.69 lb/hr VOC			
15-18	Mass Balance	1.10 lb/hr VOC			
15-19	Mass Balance	160 ft^3/min 2 g solids/ft^3	Fabric filter	99.93%	
15-20	Mass Balance	6.90 lb/hr VOC			
16-01	Mass Balance	0.50 lb/hr SO_2 0.10 lb/hr PM_{10}			
16-02	Mass Balance	0.40 lb/hr SO_2 0.10 lb/hr VOC			
16-05	Mass Balance	0.10 lb/hr VOC			
16-06	Mass Balance	0.10 lb/hr VOC 0.40 lb/hr VOC			
16-07	Testing	0.30 lb/hr PM_{10}			
16-08	Testing	0.30 lb/hr PM_{10}			
16-10	Testing	0.50 lb/hr PM_{10}			
16-12	Testing	0.10 lb/hr PM_{10}			
16-13	Mass Balance	0.10 lb/hr SO_2			
16-14	Mass Balance	0.10 lb/hr VOC			
16-15	Mass Balance	0.01 lb/hr VOC			
16-16	Mass Balance	0.10 lb/hr SO_2			
16-17	Mass Balance	0.02 lb/hr VOC			
16-18	AP-42	See Section 1.4			
16-19	Testing (PM_{10}) Mass Balance (SO2)	0.30 lb/hr PM_{10} 0.10 lb/hr SO_2			
16-20	AP-42 (PM, SO_2, NO_X) Vendor Specification (CO, VOC)	7.6 lb/MMscf PM_{10} 0.60 lb/MMscf SO_2 100 lb/MMscf NO_X 0.19 lb/hr CO 0.13 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
16-21	Testing (PM10) Mass Balance (VOC)	0.20 lb/hr PM_{10} 0.40 lb/hr VOC			
16-22	Mass Balance	0.01 lb/hr PM_{10} 0.01 lb/hr VOC			
16-23	SOCMI	6.60 lb/hr VOC			
16-24	Mass Balance	1.80 lb/hr SO_3			
16-28	Mass Balance	0.10 lb/hr SO_2			
16-30	AP-42 Sec. 1.4	See Tables 1.4-1 and 1.4-2			1.2 MMBtu/hr 8,760 hr/yr
16-31	Mass Balance	3.83 lb/hr VOC			
16-33	Mass Balance	0.19 lb/hr SO_2 0.10 lb/hr H_2S			8,760 hr/yr
BH-01 BH-02	Testing (SO_2, VOC, NO_X, CO) AP-42 (PM_{10})	2.59 lb/hr PM_{10} 5.60 lb/hr SO_2 1.87 lb/hr VOC 13.60 lb/hr CO 47.60 lb/hr NO_X			Emission rates are for each boiler except SO_2. The emission rate for SO_2 is bubbled for both sources.
21-01	Testing (PM_{10}) Mass Balance (VOC, SO_2, CO, NO_X)	0.10 lb/hr PM_{10} 0.01 lb/hr SO_2 1.71 lb/hr VOC 3.80 lb/hr VOC 0.50 lb/hr NO_X			Emissions are calculated every six months.
21-02	SOCMI	3.79 lb/hr VOC			
21-03	Mass Balance	0.01 lb/hr VOC			Emissions are calculated annually.
21-04	Testing	2.16 lb/hr VOC			
23-01	SOCMI	*NC-23 Scenario* 1.12 lb/hr VOC *MeBr Scenario* 2.33 lb/hr VOC 0.97 lb/hr MeOH 0.97 lb/hr MeBr			
23-02	Mass Balance	0.10 lb/hr PM_{10}			
23-03	*NC-23 Scenario* Testing *MeBr Scenario* Mass Balance	*NC-23 Scenario* 0.35 lb/hr VOC *MeBr Scenario* 27.37 lb/hr VOC 27.37 lb/hr MeOH			
23-04	Mass Balance	0.44 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
23-05	*NC-23 Scenario* Testing *MeBr Scenario* Mass Balance	*NC-23 Scenario* 2.90 lb/hr VOC *MeBr Scenario* 1.60 lb/hr VOC 0.40 lb/hr MeOH 0.90 lb/hr MeBr			
23-06 23-07 23-08	Mass Balance (PM_{10}) Testing (VOC)	0.30 lb/hr PM_{10} 3.80 lb/hr VOC			
23-09	Mass Balance	0.10 lb/hr PM_{10}			
23-10	Mass Balance	0.10 lb/hr PM_{10}			
23-11A 23-11B	Mass Balance	0.10 lb/hr PM_{10}			
23-12A 23-12B	Mass Balance	0.10 lb/hr PM_{10}			
23-13	Mass Balance	0.10 lb/hr PM_{10}			
23-16	Mass Balance	0.10 lb/hr MeOH 0.01 lb/hr H_2SO_4			
23-17	Mass Balance	0.01 lb/hr Ethylene Glycol			
23-18	Mass Balance	0.01 lb/hr Ethylene Glycol			
BT-01	Mass Balance	0.01 lb/hr VOC 0.14 lb/hr H_2S			
BT-11 BT-13	Mass Balance	0.01 lb/hr VOC 0.01 lb/hr H_2S 0.20 lb/hr NH_3 0.03 lb/hr Halogens			Emission rates for each source.
BT-12, BT-23, BT-24, BT-25, BT-26, BT-27, BT-28	Mass Balance	0.01 lb/hr VOC 0.20 lb/hr NH_3 0.03 lb/hr Halogens			Emission rates for each source.
BT-16	Mass Balance	30.00 lb/hr VOC 0.01 lb/hr H_2S			Emission rates for each source.
BT-17	TANKS	16.40 lb/hr VOC 0.01 lb/hr H_2S			
BT-21	Mass Balance	4.12 lb/hr PM_{10} 3.37 lb/hr VOC			

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
BT-22	Engineering Estimate	0.02 lb/hr VOC			
DM-01	TANKS	0.03 lb/hr VOC			
DM-02	AP-42 Section 1.4	0.50 lb/hr PM_{10} 6.00 lb/hr SO_2 0.10 lb/hr VOC 0.10 lb/hr CO 0.31 lb/hr NO_X			1.12 MMBtu/hr SO_2 Determined by mass balance PM_{10} EF is from stack testing
DM-03 DM-06	TANKS	0.81 lb/hr H_2O_2			Emission rates for each source.
DM-07	SOCMI	4.10 lb/hr VOC			
MS-01	Water9	6.00 lb/hr VOC			Calculate emission rate once every six months
MS-02	Mass Balance	0.10 lb/hr VOC			Calculate emission rate once every six months
MS-03	Mass Balance	0.30 lb/hr VOC			Calculate emission rate once every six months
MS-05	Mass Balance	0.67 lb/hr VOC			
MS-06	Mass Balance	0.50 lb/hr SO2 7.00 lb/hr VOC			
MS-07	TANKS	47.70 lb/hr VOC			
MS-08 -01 -02 -03 -04 -05 -06 -07 -08	AP-42	See AP-42 Sections 3.2 3.3			Emission rates are based on worst case fuel combustion. VOC emission rate includes an estimate for non-combustion emissions (evaporation, crankcase, and refueling losses).
MS-12	SOCMI	1.06 lb/hr Refrigerant			Combined all Non-VOC/Non-HAP Refrigerant emissions for the entire facility
24-01	Mass Balance	48.5 lb/hr VOC 0.10 lb/hr HBr 0.10 lb/hr Acetone 0.10 lb/hr HCl0.1 lb/hr 1,2-Epoxybutane			Primary Operating VOC emissions from the reactor before flaring are 48.5 lb/hr

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
24-01	Mass Balance	48.5 lb/hr VOC 0.10 lb/hr HBr 0.10 lb/hr Acetone 0.10 lb/hr HCl 0.1 lb/hr			VOC missions are not sent to a flare but emitted directly to the atmosphere HBr and HCl are scrubbed out by the wash column.
24-02	SOCMI	1.2 lb/hr VOC 0.1 lb/hr HBr 0.1 lb/hr Acetone 0.1 lb/hr HCl 0.1 lb/hr 1,2-Epoxybutane 0.2 lb/hr Ethylene Glycol			
33-01	Mass Balance ChemCAD Manufacturer HCl Stack Test	1.90 PM_{10} lb/hr 0.10lb/hr SO_2 5.15 lb/hr VOC 1.68 lb/hr CO 8.71 lb/hr NO_X 1.60 lb/hr H_2S 1.00 lb/hr Br_2 0.10 lb/hr HBr 0.20 lb/hr HCl 1.04 lb/hr Benzene 0.01 lb/hr Bromoform 1.28 lb/hr Xylene 0.01 lb/hr Phenol 1.29 lb/hr Toluene		99.9% VOC	Emission factors are based on maximum feed rate 1,380 lb/hr brominated VOC compounds
33-02	SOCMI	5.15E-05 lb/hr Benzene 9.14E-03 lb/hr Bromoform 4.08E-05 lb/hr Hexane 1.29E-05 lb/hr Isooctane 2.75E-04 lb/hr Phenol 1.01E-04 lb/hr Toluene 4.59E-04 lb/hr Xylene			
33-03	Mass Balance	0.10 lb/hr PM_{10}	Fabric Filter	99.93%	<3 micron

SN	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lbs/ton, lbs/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
33-04	Mass Balance	1.17E-04 lb/hr N_2H_4			

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
BR-01 BR-04	VOC	18/25A	5 year	Compliance Verification
BR-01 BR-04 BR-12	Br_2 Cl_2	26A	5 year	Compliance Verification
SR-01	SO_2	6C	5 year	Compliance Verification
CB-16	Br_2	26A	5 year	Compliance Verification
CB-16 (Alternate)	VOC	18 or 25A	Every 365 days operation	Compliance Verification
AD-05	VOC HBr	18 or 25A 26A	5 year	Compliance Verification
AD-35	PM_{10} SO_2 VOC CO NO_X	5 6C 18/25A 10B 7E	2 years	Compliance Verification
AD-35	Br_2	26A	5 year	Compliance Verification
DB-01	Br_2	26A	5 year	Compliance Verification
DB-04	Br_2	26A	5 year	Compliance Verification
TB-14 (Stabrom)	Br_2 BrCl Cl_2	26A 26A 26A	5 year	Compliance Verification
15-12	VOC	18 or 25A	2 year	Compliance Verification
15-12	PM_{10}	5	2 year	Compliance Verification
15-12	Br_2	26A	5 year	Compliance Verification
15-16	PM_{10}	5	2 year	Compliance Verification
16-02	Br_2	26A	5 year	Compliance Verification
16-24	SO_2	Approved Method	5 year	Compliance Verification
BH-01 BH-02	SO_2 VOC CO NO_X	6C 18/25A 10B 7E	5 year	Compliance Verification

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
21-04	VOC	Approved Method	5 year after initial compliance	Compliance Verification
23-03	VOC	18	5 year	Compliance Verification
23-05	VOC	18	5 year	Compliance Verification
23-06 23-07 23-08	VOC	18	5 year, one silo, must be in receiving mode	Compliance Verification
23-06 23-07 23-08	HBr	26A	5 year, one silo, must be in receiving mode	Compliance Verification
DM-02	PM_{10} VOC CO NO_X	5 18 10B 7E	5 year	Compliance Verification
DM-02	SO_2	6C	2 year	Compliance Verification
33-01	Br_2	26A	5 year	Compliance Verification

14. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency	Report (Y/N)
BR-01 BR-04	Flow Rate	Flow Rate Monitor Alarm	Continuously	Y
SR-01	Temperature	Thermocouple	Continuously	N
AD-05	Scrubber Media Flow Rate	Flow Rate Monitor	Continuously	N
AD-35	Temperature	Thermocouple	Continuously	N
23-05	Liquid to Gas Mass Flow Rate	Flow Rate Monitor	Continuously	N
23-05	Stripper Temperature	Thermocouple	Continuously	N
TB-25 (NC-24)	Coolant Temperature	Thermocouple	Continuously (Compliance is demonstrated using daily averages)	N
15-02	Br_2	CEM	Continuously	N
15-12	Br_2	CEM	Continuously	N

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency	Report (Y/N)
16-01	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
16-01	Scrubber Media pH	pH Monitor	Every 3 hours	N
16-02	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
16-02	Scrubber Media pH	pH Monitor	Every 3 hours	N
16-05	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
16-05	Scrubber Media pH	pH Monitor	Every 3 hours	N
16-06	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
16-06	Scrubber Media pH	pH Monitor	Every 3 hours	N
16-13	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
16-24	Scrubber Media Flow Rate	Flow Rate Monitor	Every 3 hours	N
BH-01 BH-02	H_2S Concentration / Gas Flow Rate	H_2S Concentration Monitor / Flow Rate Monitor	Continuously for concentration Once every six hours for flow rate	N
21-01	Process Gas Flow Rate into Oxidizer	Flow Rate Monitor	Continuously	N
21-01	Combustion Zone Temperature	Thermocouple	Continuously	N
23-03	Scrubber media Flow Rate	Flow Rate Monitor Alarm	Continuously	N
23-05	Scrubber media Flow Rate	Flow Rate Monitor Alarm	Continuously	N
DM-02	Combustion Zone Temperature	Thermocouple	Continuously	N
24-01	Water Flow Rate	Flow Rate Monitor	Continuously	N
	Chilled Water Temperature	Thermocouple		
33-01	Combustion Zone Temperature	Thermocouple	Continuously	N
	Scrubber Media Flow Rate	Flow Rate Meter	Continuously	N
	Evaporative Cooling Water Flow Rate	Flow Rate Meter	Continuously	N
	Solids Concentration in Evaporative Cooling Water	Sampling	Weekly	N

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency	Report (Y/N)
	Brue Feed Tank Feed Rate	Flow Meter	Continuously	Y

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Limit (as established in permit)	Frequency	Report (Y/N)
BR-01 BR-04	Brine Solution Flow Rate	Established according to most recent satisfactory test	Per Alarm Incident	Y
BR-12	Pump Discharge Valve Position and Run Light	Established according to most recent satisfactory test	3 hours	Y
BR-12	Caustic Concentration of Scrubber Media	Strength of caustic solution as established according to most recent satisfactory test	Each RailCar/Truck Unloading	Y
SR-01	Incinerator Temperature	1200 °F or above	Continuous	N
CB-04	Methanol Throughput	10^6 gallon per consecutive 12 months	Monthly	Y
CB-16	Batch Production (Alternate Scenario)	185 batches per consecutive 12 months	Monthly	Y
CB-18	Raw Material Baghouse Products	Identity of each compound, TLV, amount of each compound	Per Batch	N
AD-05	Scrubber Media Flow Rate	Established according to most recent satisfactory test	4 hour	N
AD-05	Caustic Concentration of Scrubber Media	Strength of caustic solution and change out as established according to most recent satisfactory test	12 hour	N
AD-21	Period of Storage of C8 Olefin	Not to exceed 4380 hours per consecutive 12 months	Monthly	N
AD-35	Incinerator Temperature	1500 °F or above	Continuous	N
AD-39	Duration of each Alternate Scenario Event and Vapor Pressure	2.9 tpy VOC as calculated from mass balance and records	Per Event	N

SN	Recorded Item	Limit (as established in permit)	Frequency	Report (Y/N)
AB-15	Carbon Bed Regeneration/Carbon Replacement	Regenerate every 12 hours Replace Every 10,220 hours of operation	N/A	N
DB-01	Caustic Concentration of Scrubber Media	Must measure greater than 5%	12 hour	N
		Replace caustic when concentration falls below 5%	As Needed	N
	Scrubber Media Pumps	Visual Inspections	Once Per Day	N
DB-07	Dried Tanks of Diphenyl Oxide	150 tanks per year	Monthly	N
23-05	Liquid to Gas Mass Flow Rate Ratio	L/G ≥ 5.7	Continuous	N
23-05	Stripper Temperature	170 ºF or above	Continuous	Y
TB-25 (NC-24)	Glycol Coolant Temperature	Maximum Daily Ave 40 °F	Daily	N
TB-47 (NC-22)	Tons of off-spec product processed	660 tons/12 month	Monthly	Y
15-18 15-20	DPE Production By-Product Generation	140,000 lbs/week By-Product Throughput	Weekly	N
16-01	Scrubber Media Flow Rate	6 gpm	3 hours	N
16-01	Scrubber Media pH	Established according to most recent satisfactory test	3 hours	N
16-02	Scrubber Media Flow Rate	60 gpm	3 hours	N
16-02	Scrubber Media pH	Established according to most recent satisfactory test	3 hours	N
16-05	Scrubber Media Flow Rate	4 gpm	3 hours	N
16-05	Scrubber Media pH	Established according to most recent satisfactory test	3 hours	N
16-06	Scrubber Media Flow Rate	6 gpm	3 hours	N
16-06	Scrubber Media pH	Established according to most recent satisfactory test	3 hours	N
16-13	Scrubber Media Flow Rate	4 gpm	3 hours	N
16-14	Carbon Canister Replacement	Once every year	Annually	N
16-15	Carbon Canister Replacement	Once every year	Annually	N
16-22	Carbon Canister Replacement	Once every year	Annually	N
16-24	Hours of Operation	1,752 hours per year	Per Event	N
16-24	Scrubber Media Flow Rate	6 gpm	3 hours	N
16-31	Phthalic Anhydride Throughput	18.25 MM lb per consecutive 12 months	Monthly	Y

SN	Recorded Item	Limit (as established in permit)	Frequency	Report (Y/N)
BH-01 BH-02	H_2S Concentration in fuel	Established according to most recent satisfactory test for SO_2	6 hours	N
BH-01 BH-02	Fuel Flow Rate	Established according to most recent satisfactory test	6 hours	N
21-01	Combustion Zone Temperature	1400 ºF Min.	Continuous	N
NC-22 Unit	Number of Batches Produced	3,137 batches per consecutive 12 months	Monthly	Y
23-03	Scrubber Media Flow Rate	Minimum flow rate set point established according to most recent satisfactory test.	Per Alarm Incident	N
23-04	By-Product Drum Turnovers	96 turnovers per day	Daily	N
23-05	Scrubber Media Flow Rate	Minimum flow rate set point established according to most recent satisfactory test.	Per Alarm Incident	N
23-14	Cleaning Cycles	If less than 75 cycles per year then monthly recordkeeping of number of cycles.	Monthly	Y
		If more than 75 cycles per year then compliance demonstrated through emission calculations.	Monthly	
NC-23 CMPU	Primary Reactor Throughput for ABRM1	1.725 Million Pounds of ABRM1 per year	Monthly	Y
DM-02	Combustion Zone Temperature	1200 °F or above	24 hours	N
MS-02	Amount of Solids Transferred to Landfill (MS-06)	Based on Semi-Annual Emission Calculations	Monthly	N
MS-03	Amount of Water Recovered	82.0 million gallons per year (total)	Monthly	N
MS-05	Coating and Adhesives Usage	100 gallons per year	Monthly	N
MS-06	All Matter Disposed	24 million pounds per consecutive 12 months	Monthly	N
MS-07	Gasoline Throughput	200,000 gallons per consecutive 12 months	Monthly	N

SN	Recorded Item	Limit (as established in permit)	Frequency	Report (Y/N)
MS-08 -01 -02 -03 -04 -05 -06 -07 -08	Hours of Operation Reason of Operation (*i.e.* testing, readiness checks, emergency, *etc.*)	Non-Emergency: 100 hr per calendar year per engine Emergency: No Limit	Monthly	Y
24-01	Water Flow Rate	Minimum Daily Ave. 1,700 lb/hr	Daily	N
	Chilled Water Temperature	Maximum Daily Ave. 60 ºF		
24-01	Duration of each event while operating in alternate Scenario	0.60 tpy VOC calculated based on mass balance and recordkeeping		
NC-24 Unit	Gallons of Product	2,800,000 gallons per year	Monthly	Y
	1,2-Epoxybutane Usage	50,000 gallons per year		
	Venting to SN-AD-26	24-hours per consecutive 12 months. If venting exceeds 24 hours calculate emissions for each event.		
33-.01	Feed Tank Feed Rate to Thermal Oxidizer	1,380 lb/hr	Monthly	Y
	Thermal Oxidizer Temperature	Minimum 1,750 °F	Continuously	Y
	Scrubber Media (Brine) Flow Rate	350 gpm	Continuously	N
	Evaporative Cooling Water Flow Rate	20 gpm	Continuously	N
	Evaporative Cooling Water Solids (including TDS)	183 mg/l	Weekly	N

16. OPACITY:

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
BR-01	5	Department Guidance	Inspector's Observation
BR-04	5	Department Guidance	Inspector's Observation
BR-09	5	Department Guidance	Inspector's Observation
BR-12	5	Department Guidance	Inspector's Observation
SL-01	5	Department Guidance	Inspector's Observation

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
SR-01	5	Department Guidance	Inspector's Observation
CB-01	5	Department Guidance	Inspector's Observation
CB-16	5	Department Guidance	Inspector's Observation
CB-18	5	Department Guidance	Inspector's Observation
AD-05	5	Department Guidance	Inspector's Observation
AD-16	5	Department Guidance	Inspector's Observation
AD-26	5	Department Guidance	Inspector's Observation
AD-35	5	Department Guidance	Inspector's Observation
DB-01	5	Department Guidance	Inspector's Observation
DB-04	5	Department Guidance	Inspector's Observation
DB-05	5	Department Guidance	Inspector's Observation
DB-06	5	Department Guidance	Inspector's Observation
DB-08	5	Department Guidance	Inspector's Observation
DB-17	5	Department Guidance	Inspector's Observation
DB-19	5	Department Guidance	Inspector's Observation
DB-22	5	Department Guidance	Inspector's Observation
TB-04	5	Department Guidance	Inspector's Observation
TB-05	5	Department Guidance	Inspector's Observation
TB-08	5	Department Guidance	Inspector's Observation
TB-14	5	Department Guidance	Inspector's Observation
15-02	5	Department Guidance	Inspector's Observation
15-12	5	Department Guidance	Inspector's Observation
15-16	5	Department Guidance	Inspector's Observation
15-19	5	Department Guidance	Inspector's Observation
16-01	5	Department Guidance	Inspector's Observation
16-02	5	Department Guidance	Inspector's Observation
16-06	5	Department Guidance	Inspector's Observation
16-07	5	Department Guidance	Inspector's Observation
16-08	5	Department Guidance	Inspector's Observation
16-10	5	Department Guidance	Inspector's Observation
16-12	5	Department Guidance	Inspector's Observation
16-18	5	Department Guidance	Inspector's Observation
16-19	5	Department Guidance	Inspector's Observation
16-20	5	Department Guidance	Inspector's Observation
16-21	5	Department Guidance	Inspector's Observation
16-22	5	Department Guidance	Inspector's Observation
16-29	5	Department Guidance	Inspector's Observation
16-30	5	Department Guidance	Inspector's Observation
BH-01	5	Department Guidance	Inspector's Observation

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
BH-02	5	Department Guidance	Inspector's Observation
21-01	5	Department Guidance	Inspector's Observation
23-02	5	Department Guidance	Inspector's Observation
23-06	5	Department Guidance	Inspector's Observation
23-11A	5	Department Guidance	Inspector's Observation
23-11B	5	Department Guidance	Inspector's Observation
23-12A	5	Department Guidance	Inspector's Observation
23-12B	5	Department Guidance	Inspector's Observation
23-13	5	Department Guidance	Inspector's Observation
BT-11	5	Department Guidance	Inspector's Observation
BT-12	5	Department Guidance	Inspector's Observation
BT-13	5	Department Guidance	Inspector's Observation
BT-21	5	Department Guidance	Inspector's Observation
DM-02	5	Department Guidance	Inspector's Observation
MS-08-X	20/5	§19.503 and Part 52, Subpart E	Inspector's Observation
33-01	5	Department Guidance	Inspector's Observation

17. DELETED CONDITIONS:

Former SC	Justification for removal
28 through 35	The equipment that these conditions pertain to has been removed.

18. GROUP A INSIGNIFICANT ACTIVITIES:

INSIGNIFICANT ACTIVITIES				
SN	Description	Category	Pollutant	ton/yr
BR-05	Recovered Groundwater Storage Tank, T-3045	A13	VOC Bromoform Ethylene Dibromide Ethylene Dichloride Toluene Br_2	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01
BR-16	C-12 Olefin Storage (up to 10,000 gal total capacity)	A3	VOC	0.07
SL-03	Sulfinol Storage Sump (S-1901)	A3	Sulfolane DIPA	<0.01 <0.01
SL-04	MDEA Storage Tank (T-5001)	A3	MDEA	<0.01

INSIGNIFICANT ACTIVITIES				
SN	Description	Category	Pollutant	ton/yr
CB-10	Wash Water Tank	A13	VOC HCl HBr Acetone	<0.10 <0.10 <0.10 <0.10
CB-20	Formic Acid Storage Bins	A13	Formic Acid	<0.01
DE-05	Pressure Vessel	A13	No Emissions	N/A
DB-23	DPE Heavies	A3	VCO	<0.01
AD-16	Natural Gas-Fired Heater < 10 MMBtu/hr	A1	PM/PM_{10} SO_2 VOC CO NO_X	0.14 0.05 0.75 1.06 1.23
AD-38	Alcohol Addition System	A13	VOC	0.02
AB-17	T-703 Ethylene Glycol Storage Tank	A3	Ethylene Glycol	0.001
TB-08	Polymer Transfer	A13	PM PM_{10}	0.14 0.07
TB-13	Refrigerant Storage Tank	A3	VOC Ethylene Glycol	<0.01 <0.01
TB-26	Sulfuric Acid Storage Tank Alternate Use: Ethylene Glycol Storage	A3	VOC H_2SO_4 Ethylene Glycol	0.04 0.05 0.04
TB-27	Refrigerant Storage Tank	A3	Ethylene Glycol	<0.01
TB-36	Water Scrubber Tank	A3	VOC	0.03
TB-40	Raw Material Weigh Vessel	A13	PM/PM_{10}	0.44
TB-43	During NC-22 Scenario B	A13	VOC	0.10
--	Heating System Expansion Tank	A13	VOC	<0.01
--	Hot Water Tank 67-65-1	A13	Methanol	0.02
--	Area Safety Relief Knockout Pot D-9505	A13	Non-VOC Caustic	N/A
--	Antifoam Storage Tank, T-95107	A13	Org. Liqs., 3.5 psia	N/A
--	Hot Water Tank, T-602	A13	VOC	0.02
--	Pressurized Ethylene Glycol Storage Tank, (D-9972)	A13	None	N/A
16-09	EBTBP Ambient Dust Collector SF9398	A13	PM/PM_{10}	0.3
16-30	Indirect-Fired Gas Heater	A1	PM/PM_{10} SO_2 VOC CO NO_X	0.5 0.5 0.1 0.8 1.8
--	Ethylene Glycol Tanks, T-93952, T-9393, T-9351, T-9359, T-9392	A3	Ethylene Glycol	<0.01
--	Hot Oil Expansion Tank / Heat Transfer fluid Tank, T-9354	A2	VOC	0.95
--	Hot Oil Surge Tank, D-3490	A13	VOC	<0.01

INSIGNIFICANT ACTIVITIES				
SN	Description	Category	Pollutant	ton/yr
BT-02	Purchased Brine Surge Tank, T-3017	A13	VOC H_2S	0.05 0.05
BT-03	Brine/Oil Separator OS-3002	A13	VOC H_2S	0.05 0.09
BT-04	Feed Brine Pump Suction Header Vent	A13	VOC H_2S	0.05 0.05
BT-05	Overflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-06	Overflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-07	Feed Brine Pump Suction Header Vent	A13	VOC H_2S	0.05 0.05
BT-08	Brine/Oil Separator Outlet Line Vent	A13	VOC H_2S	0.05 0.05
BT-09	Overflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-10	Brine/Oil Separator Outlet Line Vent (OS-3002)	A13	VOC H_2S	0.05 0.05
BT-14	Vacuum Pump Vent	A13	VOC H_2S	0.05 0.05
BT-15	Overflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-18	Brine Underflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-19	Brine Underflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-20	Brine Underflow Line Vent	A13	VOC H_2S	0.05 0.05
BT-30	Brine Management Line Vent	A13	VOC H_2S	0.05 0.05
DM-04	Catalyst Loading	A13	PM/PM_{10}	0.23
DM-05	Stabilizer Hopper	A13	PM/PM_{10}	0.13
--	Solid Waste Vault No. 2	A13	PM/PM_{10} VOC	Trace Trace
--	Outfall 002 Bioreactor	A13	Chlorine	Trace
--	PSV-1 Sumps	A13	VOC	1.51
MS-09	Diesel fuel Storage Tanks (up to 10,000 gallons total capacity)	A3	VOC	0.12
MS-10	Gasoline Storage Tanks (up to 2,000 gallons total capacity)	A13	VOC HAPs	1.30 0.07
MS-11	Cooling Towers (Maintenance/Support Facilities)	A13	PM/PM_{10} Chlorine	3.29 Trace
--	Drinking Water Treatment and Distribution	A13	N/A	N/A
--	Quality Control Laboratory	A5	N/A	N/A

INSIGNIFICANT ACTIVITIES				
SN	Description	Category	Pollutant	ton/yr
--	A-12 Emergency Systems Generators – Phone System and Admin Bldg Backup, Emergency Fire Pumps (2), Potable Water Supply Backup, Material Analyzer Backup, Outfall Flow Monitor Battery Backup	A12	N/A	N/A
--	200 gallon Hot Oil Tank (CP-6000-68)	A3	VOC	<1.00E-7
Totals for Category A1			PM PM_{10} SO_2 VOC CO NO_X	0.25 0.25 0.5 0.23 2.45 3.28
Totals for Category A2			VOC	0.95
Totals for Category A3			VOC H_2SO_4 Sulfolane DIPA MDEA Any Single HAP Total HAP	0.80 0.05 0.01 0.01 0.01 0.07 0.07
Totals for Category A13			VOC PM PM_{10} SO_2 H_2S Br_2 HCl HBr Acetone Formic Acid Any Single HAP Total HAP	4.92 4.54 4.46 2.61 2.13 0.01 <0.10 <0.10 <0.10 0.01 0.06 0.12

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0762-AOP-R25

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Albemarle Corporation - South Plant
Permit Number: 762-AOP-R26
AFIN: 14-00028

$/ton factor	23.93	Annual Chargeable Emissions (tpy)	4593.13
Permit Type	Minor Mod	Permit Fee $	500

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	-25.02
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		127.4	127.4	0	-1.42E-14	127.4
PM_{10}		116.4	116.4	0		
$PM_{2.5}$				0		
SO_2		3295.1	3295.1	0	0	3295.1
VOC		511.7	488.9	-22.8	-22.8	488.9
CO		181.2	181.2	0		
NO_X		494.4	494.4	0	0	494.4
Acetone	☑	0.4	0.4	0	0	0.4

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Ammonia	☑	48.33	47.23	-1.1	-1.1	47.23
Br2	☑	47.24	46.36	-0.88	-0.88	46.36
Br2+HBr	☑	16.32	16.32	0	0	16.32
BrCl	☑	0.88	0.88	0	0	0.88
H2O2	☑	7.54	7.54	0	0	7.54
H2S	☑	13.7	13.7	0	0	13.7
H2SO4	☑	0.32	0.32	0	0	0.32
HBr	☑	25.29	25.05	-0.24	-0.24	25.05
Non-VOC/Non-HAP Refrigerant	☑	9.62	9.62	0	0	9.62
	☐		0	0		
Benzene	☐	18.08	18.08	0		
Br2+Cl2	☑	0.1	0.1	0	0	0.1
Cl2	☑	4.03	4.03	0	0	4.03
Cl2 or Halogens	☑	0.62	0.62	0	0	0.62
HCl	☑	8.87	8.87	0	0	8.87
Hydrazine	☑	0.46	0.46	0	5.551E-17	0.46
Methanol	☐	21.86	21.31	-0.55		
Methyl Bromide	☐	18.72	9.54	-9.18		
Methylene Chloride	☑	5.83	5.83	0	8.882E-16	5.83