

## STATEMENT OF BASIS

for the issuance of Air Permit # 1085-AOP-R4.

**1. PERMITTING AUTHORITY:**

Arkansas Department of Environmental Quality  
8001 National Drive  
Post Office Box 8913  
Little Rock, Arkansas 72219-8913

**2. APPLICANT:**

Eastman Chemical Company  
2800 Gap Road  
Batesville, Arkansas 72503

**3. PERMIT WRITER**

Paula Parker

**4. PROCESS DESCRIPTION AND SIC CODE:**

SIC Description: Chemical Processing Plant  
SIC Code: 2869  
NAICS Code: 325110

**5. SUBMITTALS:** 1/26/06; 2/1/06; 3/13/06

**6. REVIEWER'S NOTES:**

Modification #1:

The facility has requested a minor permit modification in order to expand biodiesel production by utilizing existing equipment located in the Solvent Recovery and Storage Tanks and Misc. Sources areas. The facility currently produces biodiesel in the Organic Chemical Intermediates section. The Solvent Recovery area will also continue to be used to recover VOC solvent as presently permitted. The facility is seeking no increase to permitted emission rates.

The facility plans to use tanks and scrubbers in the Solvent Recovery and Storage Tanks and Miscellaneous Sources areas to produce biodiesel. The SV-01 and SV-03 scrubbers (4PSR-00, Solvent Recovery Bubble), which control emissions from several tanks, are anticipated to emit no more than 0.0005 ton/yr and 0.0002 ton/yr VOC/HAP, respectively. The facility plans to use other equipment in the Storage Tanks section, which will be routed to the RTO. Total post-control emissions for these sources are 2.43 ton/yr VOC/HAP.

Because these sources are "bubbled" and potential emissions are greater than 2.00 ton/yr HAP, the process will be limited to 1.95 ton/yr HAP. To limit HAP emissions from this process, a condition has been added to the permit to limit production to 31 million gallons of biodiesel product annually.

Modification #2:

The facility has also requested a minor permit modification in order to install upgrade equipment to the Regenerative Thermal Oxidizers (RTOs) to increase the destruction removal efficiency (DRE) from 95% to 98%.

The facility requests a modification in order to install a replacement air seal inlet and outlet main valves and to add a chamber purge system to prevent leakage and air infiltration around the valves. The upgrade should not increase operational capacity of the RTOs, which is limited by the fan performance, exhaust temperatures, and duct pressures on the units. The air handling system itself is a bottleneck for the RTO air throughput.

The facility does not anticipate any increase of criteria pollutant emissions associated with this modification. The upgrade will increase the DRE, thus reducing emissions of VOC and HAP, without increasing the usage of natural gas.

The upgrade in DRE is required for future compliance with 40 CFR 63, Subpart FFFF – NESHAP for Miscellaneous Organic Chemical Manufacturing (MON). The compliance date for the MON is May 10, 2008.

**7. COMPLIANCE STATUS:**

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

The facility is currently under no enforcement actions.

**8. APPLICABLE REGULATIONS:**

**A. PSD Applicability**

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

Has this facility undergone PSD review in the past? Y Permit# 1085-A

Is this facility categorized as a major source for PSD? Y

≥ 100 tpy and on the list of 28 (100 tpy)? Y

≥ 250 tpy all other Y

**B. PSD Netting**

Was netting performed to avoid PSD review in this permit? N

If so, indicate increases and decreases used in netting for PSD purposes only.

**C. Source and Pollutant Specific Regulatory Applicability**

Source	Pollutant	Regulation
Organic Chemical Intermediates Section	VHAP	NESHAP 63 MMM
		NESHAP 63 GGG
6M07-01	NO <sub>x</sub>	NSPS Db
5M01-02	VOC	NSPS NNN
Organic Sulfonation Section DIPB Production. (Equipment Leaks)	VOC	NSPS VV

Source	Pollutant	Regulation
TF-13 (SN-5N03-43) WB-06 (SN-6M-03-08) WB-07 (SN-6M-03-09) WB-08 (SN-6M-03-10) WB-09 (SN-6M-03-11) Tanks under SN-5M04-01 Tanks under SN-5M04-02 Tanks under SN-5M04-06 Tanks under SN-5M04-08 Tanks under SN-5M14-06 TFS-60 PT-60 PT-68 PT69A PT69B PB-51 PB-52 PM-50A PM-50B TBA-100 4P94-11 SN-5N03-51 SN-5N03-53 T-280 T-265 T-251 T-220 T-211A T-211B T-241 TF-13 PA-50	VOC	NSPS Kb
Utilities Section (coal processing activities).	PM	NSPS Y
DIPB Production (equipment Leaks, benzene)	Benzene	NESHP 61 J
DIPB Production (equipment leaks, VHAP)	VHAP	NESHP 61 V

Source	Pollutant	Regulation
Tank T-210 (benzene vessel)	Benzene	NESHAP 61 Y
DIPB Production T9, D9 (benzene waste streams).	Benzene	NESHAP 61 FF
Facility (waste management/recovery operations).	VHAP	NESHAP 63 DD
6M03-05	Dioxins Furans Mercury Lead Cadmium Arsenic Beryllium Chromium CO Hydrocarbons HCl Cl <sub>2</sub> PM	NESHAP 63 EEE
6M06-01 6M07-01	Mercury Lead Cadmium Arsenic Beryllium Chromium CO VHAP HCl PM	NESHAP 63 DDDDD
Plantwide	VHAP	NESHAP FFFF

**9. EMISSION CHANGES:**

The following table summarizes plant wide emission changes associated with this permitting action.

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 1085-AOP-R3	Air Permit 1085-AOP-R4	Change
PM/PM <sub>10</sub>	340.3	340.3	0
SO <sub>2</sub>	6308.1	6308.1	0
VOC	712.8	712.8	0
CO	1858.7	1858.7	0
NO <sub>x</sub>	787.8	787.8	0
Inorganics (non-VOC HAPs)	940.0	940.0	0
Organic HAPs	712.8	712.8	0

NOTE: The Permit Appeal Resolution prompted a new system of classifying the HAPs at this facility (i.e., either “Inorganics” or “Organic HAPs”).

**10. MODELING:**

**Criteria Pollutants**

Pollutant	Emission Rate (lb/hr)	NAAQS Standard (µg/m <sup>3</sup> )	Averaging Time	Highest Concentration (µg/m <sup>3</sup> )	% of NAAQS
PM <sub>10</sub>	84.9	50	Annual	2.34	5%
		150	24-hour	4.26	3%
SO <sub>2</sub>	1440.2	80	Annual	4.58	6%
		1,300	3-hour	263.3	21%
		365	24-hour	72.8	20%
NO <sub>x</sub>	180.3	100	Annual	4.59	5%

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ( $\mu\text{g}/\text{m}^3$ )	Averaging Time	Highest Concentration ( $\mu\text{g}/\text{m}^3$ )	% of NAAQS
VOC	172.7	0.12	1-hour (ppm)	0.024	20%
CO	424.3	10,000	8-hour	58.68	1%
		40,000	1-hour	168.7	1%

**Non-Criteria Pollutants**

A site-specific presumptively acceptable emission rate (PAER) was developed for this facility to provide a simple means of establishing whether non-criteria emissions from this facility meet the ADEQ’s Non-Criteria Pollutant Control Strategy. Specifically, the site specific PAER will allow Eastman to make a relatively quick demonstration that emissions of pollutants generate off-site concentrations less than 1/100th of the TLV for the pollutant in question.

Please see Plantwide Conditions 8, 10, and 11 for details on the site-specific PAER screening system and non-criteria emission tracking.

**11. CALCULATIONS**

This permit includes a Plantwide Applicable Limit (PAL) for all criteria pollutants. The following table outlines the emission factors to be used to calculate the emissions of each criteria pollutant on a 12-month rolling basis to demonstrate compliance with the ton per year limit specified in the permit for each pollutant.

<b>Plantwide Applicable Limit Emission Estimation for VOC</b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	Material Balance
	OCI-FUG	Fixed Factor
Utilities	6M01-01	0.33 lb/ton coal
		0.33 lb/ton sludge
		3.1 lb/ton liquids
	6M06-01	5.8 lb/million cubic feet of nat. gas
	6M07-01	13.12 lb/million cubic feet of nat. gas
Organic Sulfonation	5M01-02	0.053 lb/hour of operation

<b>Plantwide Applicable Limit Emission Estimation for VOC</b>		
Process Area	Source	Emission Factor
	5M01-06	0.41 lb/hour of operation
	5M03-02	0.18 lb/hour of operation
	5M04-01	0.52 lb/hour of operation
	5M04-02	0.17 lb/hour of operation
	5MNOBS-TNK	4 lb/thousand gallons VOL
	NOBS-FUG	Fixed Factor
Chemical Destruction	6M03-05	0.096 lb/ton waste chemicals fed
	DEST-FUG	Fixed factor
Solvent Recovery	4PSR-00	2.38 tons/million lb solvents
	SR-FUG	Fixed Factor
Wastewater Treatment	7K01-01	340 lb/million gallons wastewater
	7M01-02	28.75 lb/thousand gallons wastewater
	7M01-04	2.6 lb/thousand gallons wastewater
Polymer Production	5NPOLY-TNK	7.44 lb/thousand gallons VOL
	POLY-FUG	Fixed Factor
Isopropyl Benzene Process	5NDIPB-TNK	8.32 lb/thousand gallons VOL
	5N03-52	1.24 lb/thousand gallons VOL
	5N03-54	14.72 lb/thousand gallons VOL through 5NDIPB-TNK
	5Q94-01	1.24 lb/thousand gallons VOL
	DIPB-FUG	Fixed Factor

<b>Plantwide Applicable Limit Emission Estimation for VOC</b>		
Process Area	Source	Emission Factor
Storage Tanks	5N03TK-01	1.0 ton/million pounds VOL
	6N01-02	15.2 lb/thousand gallons diesel
	6N01-03	307.7 lb/thousand gallons gasoline

<b>Plantwide Applicable Limit Emission Estimation for PM/PM<sub>10</sub></b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	3.5 lb/hour of operation
Utilities	6M01-01	1.45 lb/ton coal
		1.45 lb/ton sludge
		0 lb/ton liquids
	6M01-01A	0.05 lb/ton coal fed to 6M01-01
	6M06-01	14 lb/million cubic feet of nat. gas
	6M07-01	5 lb/million cubic feet of nat. gas
Organic Sulfonation	5M05-02	0.09 lb/hour of operation
	5M11-15	0.055 lb/hour of operation
	5M16-01	0.017 lb/hour of operation
	5M18-01	0.89 lb/hour of operation
	5M18-02	3.4 lb/hour of operation
	5M18-03	0.21 lb/hour of operation
	5M01-TSP	3.04 lb/hours of filter changes

<b>Plantwide Applicable Limit Emission Estimation for PM/PM<sub>10</sub></b>		
Process Area	Source	Emission Factor
Chemical Destruction	6M03-05	0.36 lb/ton waste chemicals fed
Isopropyl Benzene Process	5N03-54	1.51 lb/thousand gallons throughput through 5NDIPB-TNK
Cement Plant	7N02-01	0.21 lb/hour of operation

<b>Plantwide Applicable Limit Emission Estimation for SO<sub>2</sub></b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	8.4 lb/hour of operation
Utilities	6M01-01	456 lb/ton coal
		171 lb/ton sludge
		114 lb/ton liquids
	6M06-01	15.38 lb/million cubic feet of nat. gas
	6M07-01	0.6 lb/million cubic feet of nat. gas
Chemical Destruction	6M03-05	2.24 lb/ton waste chemicals fed
Isopropyl Benzene Process	5N03-54	1.51 lb/thousand gallons throughput through 5NDIPB-TNK

<b>Plantwide Applicable Limit Emission Estimation for CO</b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	5.3 lb/hour of operation
Utilities	6M01-01	15 lb/ton coal
		15 lb/ton sludge
		15 lb/ton liquids
	6M06-01	35.9 lb/million cubic feet of nat. gas
	6M07-01	81.45 lb/million cubic feet of nat. gas
Chemical Destruction	6M03-05	0.67 lb/ton waste chemicals fed
Isopropyl Benzene Process	5N03-54	6.81 lb/thousand gallons throughput through 5NDIPB-TNK

<b>Plantwide Applicable Limit Emission Estimation for NO<sub>x</sub></b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	8.7 lb/hour of operation
Oxidized Cellulose Production	4P03-09	25.4 lb/batch
Utilities	6M01-01	41.1 lb/ton coal
		41.1 lb/ton sludge
		41.1 lb/ton liquids
	6M06-01	170.51 lb/million cubic feet nat. gas

<b>Plantwide Applicable Limit Emission Estimation for NO<sub>x</sub></b>		
Process Area	Source	Emission Factor
	6M07-01	99.55 lb/million cubic feet nat. gas
Chemical Destruction	6M03-05	2.8 lb/ton of waste chemicals fed
Isopropyl Benzene Process	5N03-54	23.07 lb/thousand gallons throughput through 5NDIPB-TNK

<b>Plantwide Applicable Limit Emission Estimation for HCl</b>		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	5 lb/hour of operation
Utilities	6M01-01	30.84 lb/ton coal
		61.68 lb/ton sludge
		20.97 lb/ton liquids
Chemical Destruction	6M03-05	0.671 lb/ton waste chemicals fed
Isopropyl Benzene Process	5N03-48	44.44 lb/million gallons scrubber liquor
	5N03-55	0.17 lb/million gallons scrubber liquor

**12. TESTING REQUIREMENTS:**

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
5N09-01	SO <sub>2</sub> VOC CO	6C 25A 10	Every five years.	To ensure compliance with the lb/hr emission limits.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
	NO <sub>x</sub>	7E		
6M01-01	NO <sub>x</sub>	7E	One time.	To ensure compliance with the lb/hr emission limits.
6M03-05	VOC PM/PM <sub>10</sub> NO <sub>x</sub> SO <sub>2</sub>	25A 5 7E 6C	Annually.	To ensure compliance with the lb/hr emission limits.
	For MACT: Dioxins Furans Mercury Lead Cadmium Arsenic Beryllium Chromium CO Hydrocarbons HCl Cl <sub>2</sub> PM		Comprehensive Testing- every 61 months.  Confirmatory Testing (only dioxins and furans)-31 months after each Comprehensive Test.	To demonstrate compliance with the MACT standards.

**13. MONITORING OR CEMS**

The permittee must monitor the following parameters with CEMs or other monitoring equipment (temperature, pressure differential, etc), frequency of recording and the need for records included in any annual, semiannual or other reports.

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
5N09-01	temperature	not specified	continuous	no
	Numerous monitoring parameters specified by MACT. Please see Specific Conditions 8 through 17.			
4P03-09	% sodium hydroxide in scrubbing liquor	not specified	daily	no
6M01-01	Pressure drop	Gauge	daily	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
	across ESP			
6M01-01	ESP power input	Gauge	daily	no
6M01-01	Coal, wood, biosludge, and liquid feed rates	Not specified	daily	no
6M01-01A	pressure drop across fabric filter	Pressure gauge	daily	no
5M05-02 5M11-15 5M16-01 5M18-03 5M18-01	pressure drop	Pressure gauge	daily	no
5M11-05 5M13-01	scrubber liquid temperature and specific gravity	Monitoring device having accuracy of $\pm 1$ percent, and specific gravity monitoring device having accuracy of $\pm 0.02$ specific gravity units, each equipped with a continuous recorder	Every 15 minutes	Yes
The permittee is subject to NSPS Subpart VV, which requires numerous monitoring requirements too extensive to list here. Reference to this Subpart is listed on page 58.				
6M03-05	pressure drop across scrubber	gauge	daily	no
6M03-05	waste chemical feed rate	not specified	hourly	no
	Numerous monitoring parameters specified by MACT. Please see Specific Conditions 90a through 90kkkk.			
4PSR-00	solvent throughput	not specified	daily	no
4P02-01 4P94-01 4P94-02	scrubbing liquor flow rate	not specified	daily	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
7K01-01	VOC emissions from wastewater	Toxchem software	daily	no
5N07-04	pressure drop across scrubber	gauge	daily	no
5N03-05	general inspection of scrubber	not specified	weekly	no
5N03-48	scrubber liquor flow present?	Alarm on pump recirculation discharge to indicate low flow.	Continuous	no
5N03-54	flame presence	Alarm on flare to indicate presence of flame or low temperature	Continuous	no
The permittee is subject to NESHAP Subpart J, which requires numerous monitoring requirements too long to list here for all applicable sources in the DIPB process. These monitoring requirements are outlined in the permit starting on page 83.				
The permittee is subject to NESHAP Subpart VV, which requires numerous monitoring requirements too long to list here for all applicable sources in the DIPB process. These monitoring requirements are outlined in the permit starting on page 83.				
The permittee is subject to NSPS Subpart Kb, which requires numerous monitoring requirements too long to list here for all applicable tanks. These monitoring requirements are outlined in the permit starting on page 95.				

\* Indicate frequency of recording required for the parameter (Continuously, hourly, daily, etc.)

\*\* Indicates whether the parameter needs to be included in reports.

#### 14. RECORD KEEPING REQUIREMENTS

The following are items (such as throughput, fuel usage, VOC content of coating, etc) that must be tracked and recorded, frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
5N09-01	opacity	20%	daily	no
4P03-09	concentration of sodium hydroxide in scrubbing	4% minimum	daily	no

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
	liquor			
6M01-01	pressure drop and the power input to ESP	2.5 to 3.5 inches water 5 KW minimum	daily	no
6M01-01	amount and type of coal, biosludge, liquids, and wood waste to boilers	See Specific Condition 26	daily	no
6M01-01A	pressure drop across fabric filter	0.1 - 0.4 inches water	daily	no
5M16-01 5M18-03 5M11-15 5M05-02	pressure drop	2 - 6 inches water	daily	no
5M18-01	pressure drop	15 inches max.	daily	no
5M18-02	pressure drop	40 inches max.	daily	no
5M11-05 5M13-01	exit specific gravity and average exit temperature of the adsorbing liquid	More than 11 degrees Celsius above average temperature measured during last performance test, and all 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above or more than 0.1 unit below, the average absorbing liquid specific gravity during the most recent performance test.	15 min	no
5M04-06 5M04-08 5M14-06	capacity of storage vessels	less than 75 cubic meters	one time	no
6M03-05	opacity observations	20%	daily	no

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
6M03-05	pressure drop across scrubber	40 to 60 inches water	daily	no
6M03-05	waste chemical feed rate	19,800 lb/hr	hourly	no
6M03-05	Numerous record keeping requirements specified by MACT. Please see Specific Conditions 90a through 90kkkk.			
4PSR-00	solvent throughput	5880 lb/hr	daily	no
4P02-01 4P94-01 4P94-02	scrubber liquor flow rate	at least 70.6 gal/min	daily	no
TFS-60 PT-60 PT-68 PT-69A PT-69B	capacity of storage vessels	75 cubic meters max to be exempt from NSPS Kb	one time	no
7K01-01	VOC emission rate using Toxchem software	45.7 lb/hr	daily	no
5N07-04	scrubber pressure drop	1 to 6 inches water	daily	no
RNS-100 PB-51 PB-52 PM-50A PM-50B	capacity of storage vessels	if less than 75 cubic meters, not subject to NSPS Kb	one time	no
5N03-55	scrubber inspection	not established	weekly	no
7N02-01	opacity observations	5%	weekly	no
TF-13 PA-50	capacity of storage vessels	if less than 75 cubic meters not subject to NSPS Kb	one time	No
SV-01 SV-03 PM-50A TFS-53 TFS-54	Biodiesel production	31,000,000 gal/yr	monthly	no

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
TFS-55 TFS-56 TFS-60 TFS-71 TFS-73 TFS-74 TFS-75 TFS-76 TFS-78 TFS-80 PE-01 PR-56A PR-56B				

\* Indicate frequency of recording required for the item (Continuously, hourly, daily, etc.)

\*\* Indicates whether the item needs to be included in reports

**15. OPACITY**

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
5N09-01	20%	Pre-existing opacity limit reassigned	daily observation
6M01-01	20%	Installed after 1972. Required by 19.503(B)(1) of Regulation 19.	Control equipment operation
6M01-01A	5%	Review of inspection reports (by the Department) on fabric filters revealed that these sources have never exceeded this opacity limit.	Pressure drop across fabric filter
6M06-01 6M07-01	5%	Review of inspection reports (by the Department) on natural gas fired boilers revealed that these sources have never exceeded this opacity limit.	Combust only natural gas.
5M05-02 5M11-15 5M16-01 5M18-01 5M18-02 5M18-03	5%	Particulate emission rates do not justify an opacity limit any greater than 5%.	Pressure drop across scrubbers

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
6M03-05	20%	Installed after 1972. Required by 19.503(B)(1) of Regulation 19.	Daily observations
7N02-01	5%	Review of inspection reports (by the Department) on fabric filters revealed that these sources have never exceeded this opacity limit.	Daily observations

**16. DELETED CONDITIONS:**

The previous permit contained the following deleted Specific Conditions.

Former SC	Justification for removal
	NONE

**17. VOIDED, SUPERSEDED OR SUBSUMED PERMITS**

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

Permit #
1085-AOP-R3

**18. CONCURRENCE BY:**

The following supervisor concurs with the permitting decision:

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*Phil Murphy, P.E.*