

## STATEMENT OF BASIS

for the issuance of Air Permit # 1085-AOP-R3.

**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:** 9-10-04; 10-12-04; 12-03-04; 2-22-05

**6. REVIEWER'S NOTES:**

A separate HCl (inorganic HAP) modeling demonstration to meet PAIL and PAER requirements has been incorporated into Plantwide Condition #12. The change allows modeling submitted to the Department in the permit application as well as facility records of inorganic HAP emissions to verify that the concentration is protective of public health. At maximum permitted levels of inorganic HAPs, modeling over a five year period, the HIGH SECOND HIGH showed no exceedances of 1/100<sup>th</sup> of the TLV of HCl. The permittee's plantwide Inorganic HAP emission limits are supported by modeling conducted pursuant to the Department's Non-Criteria Pollutant Strategy. The modeling results verify the inorganic limits herein are protective of human health at the permittee's fence line.

The facility has requested a modification in order to install a 2,000 gallon liquid process tank to be used for the purpose of flushing the chemical distribution piping at the Chemical Waste Destructor (6M03-05). The tank will be used to store acetone or xylene for using in the flushing operation. The spent solvent used in flushing is then routed to either the coal-fired boiler auxiliary waste chemical burners or to the burner of the chemical waste destructor. The facility currently performs flushing activities but uses 750 gallon portable dumpsters that must be hauled by truck to deliver the solvent for the flushing. The installation of the flush tank would also reduce the risk of accidents in hauling flush solvent in the portable dumpsters and the physical connections to the dumpsters. The emissions from combustion of solvent are included in the current permit limitations for both the destructor and boilers. Emissions from tank venting will be collected and routed to the coal-fired boilers (6M01-01). Estimated emissions from the tank are very low, less than 0.1 ton/yr VOC or HAP.

Pre-EEE compliance requirements for the Chemical Waste Destructor were removed. After September 2003, these conditions were no longer applicable. Instead the facility is subject to the Post-EEE requirements already contained within the permit. The numbering of the Post-EEE conditions was not changed, however, to avert any problems with the facility's current database.

The facility has also requested a minor permit modification in order to remove from service a bleach scrubber (D75-02) in the Organic Chemical Intermediates section. The scrubber, while not actually an atmospheric emission source, removes ethyl mercaptan, an odorous compound generated by an existing batch process. The exiting gases are then routed to the regenerative thermal oxidizers (SN-5N09-01).

The facility initially installed the system under the assumption that ethyl mercaptan emissions would be much greater than those determined from collected data. Permitted values for these pollutants are 8.4 lb/hr SO<sub>2</sub> and 42.0 lb/hr VOC. Emission testing at the RTO, with the bleach scrubber in operation, indicate actual emissions of 1.11 lb/hr SO<sub>2</sub> and 34.6 lb/hr VOC. The RTO is rated at 95% destruction efficiency.

Based upon bleach usage, concentration records, and hours of operation for 2004, the hourly emissions increase, from the removal of the bleach scrubber, would be 0.02 lb/hr VOC (as ethyl mercaptan) and 0.48 lb/hr SO<sub>2</sub>. The annual increases of pollutants are 0.1 ton/yr of VOC and a 1.95 ton/yr SO<sub>2</sub>. Therefore, because actual emissions from testing, even with removal of the scrubber, would still be less than permitted values, it is not necessary to change the permit limits for the RTO sources (SN-5N09-1).

The facility has also requested changes to Specific Condition CDW12 (now CWD 9) to include a compliance option, as CDW12b (now CDW 9b), which was not included when the language was originally added to the permit. This option is already provided by 40 CFR Part 63 Subpart EEE.

**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	NESHAP 61 J
DIPB Production (equipment leaks, VHAP)	VHAP	NESHAP 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

**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-R2	Air Permit 1085-AOP-R3	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%
VOC	172.7	0.12	1-hour (ppm)	0.024	20%

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
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
	5M01-06	0.41 lb/hour of operation

<b>Plantwide Applicable Limit Emission Estimation for VOC</b>		
Process Area	Source	Emission Factor
	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
Storage Tanks	5N03TK-01	1.0 ton/million pounds VOL



<b>Plantwide Applicable Limit Emission Estimation for VOC</b>		
Process Area	Source	Emission Factor
	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
Chemical Destruction	6M03-05	0.36 lb/ton waste chemicals fed

<b>Plantwide Applicable Limit Emission Estimation for PM/PM<sub>10</sub></b>		
Process Area	Source	Emission Factor
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
	6M07-01	99.55 lb/million cubic feet nat. gas

Plantwide Applicable Limit Emission Estimation for NO <sub>x</sub>		
Process Area	Source	Emission Factor
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

Plantwide Applicable Limit Emission Estimation for HCl		
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 NO <sub>x</sub>	6C 25A 10 7E	Every five years.	To ensure compliance with the lb/hr emission limits.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
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 across ESP	Gauge	daily	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
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
7K01-01	VOC emissions from wastewater	Toxchem software	daily	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
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 liquor	4% minimum	daily	no
6M01-01	pressure drop and the power	2.5 to 3.5 inches water	daily	no

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
	input to ESP	5 KW minimum		
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
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



SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
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

\* 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
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
CWD 1, 2, and 3	These were Pre-EEE compliance requirements for the Chemical Waste Destructor. After September 2003, these conditions were no longer applicable. Instead the facility is subject to the Post-EEE requirements already contained within the permit. These condition numbers have now been reserved.

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

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

Permit #
1085-AOP-R2

**18. CONCURRENCE BY:**

The following supervisor concurs with the permitting decision:

\_\_\_\_\_

*Phil Murphy, P.E.*