

**STATEMENT OF BASIS**

for the issuance of Draft Air Permit # 0882-AR-6:

**1. PERMITTING AUTHORITY:**

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

**2. APPLICANT:**

Albemarle Corporation  
1550 Highway 371 West  
Magnolia, AR 71754

**3. PERMIT WRITER: Joseph Hurt**

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

NAICS Description: All Other Basic Inorganic Chemical Manufacturing  
NAICS Code: 325188

**5. SUBMITTALS: 11/7/2006**

**6. REVIEWER'S NOTES:**

With this permitting action, Albemarle has requested permission to install and operate five (5) diesel fired non-emergency generators (SN-EM-01), with the total power output not to exceed 1,000 hp, and no single unit to exceed 500 hp. Additionally, Albemarle has requested that the emissions from the non-emergency generators be bubbled with the existing emissions bubble for the West Plant's combustion sources. There are no changes to the annual permitted emission limits with this modification.

**7. COMPLIANCE STATUS:**

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

No compliance/enforcement issues outstanding at this time.

Permit #: 0882-AR-6

AFIN: 14-00011

Page 2 of 8

8. APPLICABLE REGULATIONS:

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?	N	Permit#
Is this facility categorized as a major source for PSD? ≥ 100 tpy and on the list of 28 (100 tpy)?	N	
≥ 250 tpy all other	N	

PSD Netting

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

Source and Pollutant Specific Regulatory Applicability

Source	Pollutant	Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD only]
SN-SG-03	Records keeping	NSPS Subpart Dc
SN-SG-06	Records keeping	NSPS Subpart Dc
SN-SG-07	Records keeping	NSPS Subpart Dc

9. EMISSION CHANGES:

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

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 0882-AR-5	Air permit 0882-AR-6	Change
PM/PM <sub>10</sub>	30.3	30.3	0
SO <sub>2</sub>	97.8	97.8	0
VOC	37.4	37.4	0
CO	98.5	98.5	0
NO <sub>x</sub>	98.5	98.5	0
H <sub>2</sub> S	7.60	7.60	0
Br <sub>2</sub>	10.80	10.80	0
HBr	0.70	0.70	0
NH <sub>3</sub>	4.90	4.90	0
Cl <sub>2</sub> (HAP)	3.90	3.90	0
HCl (HAP)	0.40	0.40	0
Ethylene Dichloride (HAP)	0.90	0.90	0
Ethylene Dibromide (HAP)	0.20	0.20	0
Dibromochloropropane (HAP)	0.01	0.01	0
Ethylene Glycol (HAP)	2.80	2.80	0
1,4 Dioxane (HAP)	8.20	8.20	0

Permit #: 0882-AR-6

AFIN: 14-00011

Page 3 of 8

10. MODELING:

**Criteria Pollutants**

Examination of the source type, location, plot plan, land use, emission parameters, and other available information indicate that modeling is not warranted at this time.

11. 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 deemed PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV ( $\text{mg}/\text{m}^3$ )	PAER (lb/hr) = 0.11*TLV	Proposed lb/hr	Pass?
H <sub>2</sub> S	13.94	1.533	1.97	No
Br <sub>2</sub>	0.66	0.073	2.60	No
HBr	9.93	1.092	0.17	Yes
NH <sub>3</sub>	17.42	1.916	1.20	Yes
Cl <sub>2</sub> (HAP)	1.45	0.16	0.91	No
HCl (HAP)	7.46	0.821	0.10	Yes
Ethylene Dichloride (HAP)	40.48	4.453	0.20	Yes
Ethylene Dibromide (HAP)	153.7	16.91	0.10	Yes
Dibromochloropropane (HAP)	0.01*	0.0011	0.01	No
Ethylene Glycol (HAP)	100	11	0.64	Yes
1,4 Dioxane (HAP)	73.20	8.06	1.88	Yes

\* - No TLV-TWA established for dibromochloropropane, OSHA occupational exposure limit = 1 part per billion = 0.001 part per million = 0.01  $\text{mg}/\text{m}^3$ . This is a surrogate screening value.  $1/100 = 0.10 \text{ } \mu\text{g}/\text{m}^3$ .

**2nd Tier Screening (PAIL)**

ISCST3 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 was deemed by the Department to be one one-hundredth of the Threshold Limit Value, as listed by the ACGIH.

Pollutant	(PAIL, $\mu\text{g}/\text{m}^3$ ) = 1/100 of Threshold Limit Value	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
H <sub>2</sub> S	139.4	50.29	Yes
Br <sub>2</sub>	6.6	6.30	Yes
Cl <sub>2</sub> (HAP)	14.5	2.21	Yes
Dibromochloropropane (HAP)	0.10	0.06	Yes

Permit #: 0882-AR-6

AFIN: 14-00011

Page 4 of 8

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)
GS-01	Tanks 4.0	-	None	-	No emission limit changes requested.
BR-01	Aspen modeling	-	Scrubber	98%	No emission limit changes requested.
BR-03	Mass Balance	-	Scrubber	99%	No emission limit changes requested.
SR-01	AP-42 (flare)	See AP-42 Table 13.5-1.	None	-	No emission limit changes requested.
SG-03	AP-42 (boiler)	See AP-42 Table 1.4-1 and 1.4-2.	None	-	CO emission limits increased, due to updates in AP-42 factors.
SG-06	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST
SG-07	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are derived from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST. Emission factor of SO <sub>2</sub> is calculated from the combustion of sweetened field gas, which is 1.343 lb/MM Btu.
GT-03	On-site stack test history.	-	Carbon canister.	Not quantified.	DBCP emission limits being lowered to comply with dispersion modeling PAIL. Stack test history indicates new limit of 0.01 lb/hr is appropriate (and conservative).
BD-03	Facility estimate, based upon process analysis.	-	None	-	Facility requests that the "Trace" bromine limit be changed to 0.1 lb/hr and 0.1 ton/yr, as a conservative estimate for bromine, ammonia, VOC, and hydrogen sulfide.

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)
HB-02	Ideal gas calculation.	-	None.	-	No emission limit changes requested
HB-06	Maximum loading.	0.06 gr/ft <sup>3</sup>	Baghouse	98%	No emission limit changes requested
HB-08	Aspen modeling.	-	Scrubber	Not quantified.	1,4 Dioxane (DEDO) newly introduced contaminant.
HB-09	Maximum loading.	0.02 gr/ft <sup>3</sup>	Baghouse	90%	No emission limit changes requested
PT-01	EPA "Protocol for Equipment Leak Emission Estimates".	-	-	Some minor changes requested for fugitive limits.	-
EM-01	AP-42 Section 3.3 Vendor Test Data (CO, PM, NO <sub>x</sub> )	lb/hp-hr: NO <sub>x</sub> 6.58E-03 CO 5.76E-03 VOC 2.51E-03 PM <sub>10</sub> 3.29E-04 SO <sub>2</sub> 2.05E-03	None.	-	VOC emissions based on TOC emission factor, and SO <sub>2</sub> emissions based on SO <sub>x</sub> emission factor in AP-42

**13. TESTING REQUIREMENTS:**

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
Amine Unit	H <sub>2</sub> S, calculated to SO <sub>2</sub> .	11	Annual	To confirm amine unit efficiency and resulting emissions at process flare and at NaHS loading stations.
SG-03, SG-06 &, SG-07	NO <sub>x</sub> CO	7E 10	Annual	Permit limit (bubble) @ 98.5 ton/yr.
GT-03	EDB EDC DBCP	18	Every 5 years.	Toxicity of HAPs involved. Confirmation of dispersion modeling for DBCP.
HB-08	1,4 dioxane	18	Every 5 years.	Toxicity of HAP involved. Confirmation of dispersion modeling. Also a newly introduced contaminant.

**14. 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)**
SG-03	Fuel inlet flow	Flow meter	Continuous	Yes-SO <sub>2</sub> , CO and NO <sub>x</sub>
SG-06	Fuel inlet flow	Flow meter	Continuous	Yes-SO <sub>2</sub> , CO and NO <sub>x</sub>
SG-07	Fuel inlet flow	Flow meter	Continuous	Yes-SO <sub>2</sub> , CO and NO <sub>x</sub>
SR-01	Fuel inlet flow	Flow meter	Continuous	Yes-SO <sub>2</sub> , CO and NO <sub>x</sub>
HB-08	Scrubber recirculating flow rate, scrubber liquid temperature, scrubber liquid concentration	Flow monitor, temperature gauge, lab analysis	Twice per day for flow and temperature. Once per day for DEDO concentration.	No
BR-03	Recirculating scrubbing liquor flow rate, weight percent of the scrubbing liquor	Flow meter, lab analysis	Daily	No

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

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

#### 15. 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)**
SR-01 SG-03 SG-06 SG-07	Purchased gas H <sub>2</sub> S concentration	Maximum 6.5 ppm (vol) H <sub>2</sub> S	As purchased	No
SR-01	H <sub>2</sub> S concentration of sweetened gas and resulting SO <sub>2</sub> emissions	22.1 lb/hr SO <sub>2</sub> emissions	Once per day	Yes
SR-01 SG-03 SG-06 SG-07 EM-01	SO <sub>2</sub> emissions	0.1 lb/hr SO <sub>2</sub> , each boiler 22.1 lb/hr SO <sub>2</sub> from flare 2.1 lb/hr SO <sub>2</sub> from non-emergency generators 5-source bubble: 97.8 ton/yr	Once per month	Yes
SR-01 SG-03 SG-06	NO <sub>x</sub> emissions CO emissions VOC emissions	See permit for lb/hr limits. 5-source bubble: 98.5 tpy, for both NO <sub>x</sub> and CO, 20.3	Once per month	Yes

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
SG-07 EM-01	PM <sub>10</sub> emissions	tpy for VOC, and 15.4 tpy for PM <sub>10</sub>		
HB-08	Scrubber recirculating flow rate, scrubber liquid temperature, scrubber liquid concentration.	Flow = 9000 lb/hr (min). T = 10 degrees Centigrade (max). Concentration = 6% DEDO (max).	Twice per day for flow and temperature. Once per day for DEDO concentration.	No
HB-08	Average lb/hr DEDO (1,4 dioxane) emissions	1.60 lb/hr	Once per day	No
BR-03	Scrubbing liquor flow rate, scrubbing liquor weight percent	Flow = 25 gpm (min) Weight % = 1.5 (min)	Once per day	No

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

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

**16. OPACITY**

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
BR-01	5%	Department guidance.	Weekly observations.
BR-03	5%	Department guidance.	Weekly observation.
SR-01	20%	Department guidance.	Weekly observation.
SG-03	5%	Department guidance.	Weekly observations.
SG-06	5%	Department guidance.	Weekly observations.
SG-07	5%	Department guidance.	Weekly observations.
GT-03	10%	Department guidance.	Weekly observations.
BD-03	10%	Department guidance.	Weekly observations.
HB-06	10%	Department guidance.	Weekly observations.
HB-09	10%	Department guidance.	Weekly observations.
EM-01	20%	Department guidance.	Weekly observations.

**17. DELETED CONDITIONS:**

The previous permit contained the following deleted Specific Conditions.

Former SC	Justification for removal
	N/A

**Permit #: 0882-AR-6**

**AFIN: 14-00011**

**Page 8 of 8**

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

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

Permit #
0882-AR-5

**19. CONCURRENCE BY:**

The following supervisor concurs with the permitting decision:

\_\_\_\_\_  
David Triplett, P.E.