

STATEMENT OF BASIS

for the issuance of Draft Air Permit # 882-AR-4

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Albemarle Corporation - Magnolia West Plant
1550 Highway 371 West
Magnolia, Arkansas 71754

3. PERMIT WRITER:

Siew Low

4. PROCESS DESCRIPTION AND SIC CODE:

SIC Description: Chemical Manufacturing Plant
SIC Code: 2819, 2869

5. SUBMITTALS: 8/3/2001, 8/29/2001

6. REVIEWER'S NOTES: This De Minimis modification includes the installation of two new boilers (SN-SG-06, SN-SG-07) for the steam generation process, and the removal of a retired boiler (SN-SG-01). Albemarle modeled the two new boilers and the resulting concentrations show that the application qualifies for De Minimis modification. 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.

8. APPLICABLE REGULATIONS:

A. Applicability

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

Has this facility undergone PSD review in the past (Y/N) N Permit # _____

Is this facility categorized as a major source for PSD? (Y/N) N

\$ 100 tpy and on the list of 28 (100 tpy)? (Y/N) N/A

\$ 250 tpy all other (Y/N) N/A

B. PSD Netting

Was netting performed to avoid PSD review in this permit? (Y/N) N

C. Source and Pollutant Specific Regulatory Applicability

Source	Pollutant	Regulation
SN-SG-03	PM/PM ₁₀ SO ₂	NSPS Subpart Dc
SN-SG-06	PM/PM ₁₀ SO ₂	NSPS Subpart Dc
SN-SG-07	PM/PM ₁₀ SO ₂	NSPS Subpart Dc

9. EMISSION CHANGES:

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

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 882-AR-3	Air permit 882-AR-4	Change
PM/PM ₁₀	30.3	30.3	0
SO ₂	97.8	97.8	0
VOC	37.4	37.4	0

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Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 882-AR-3	Air permit 882-AR-4	Change
CO	98.5	98.5	0
NO _x	98.5	98.5	0
H ₂ S	7.60	7.60	0
Br ₂	10.80	10.80	0
HBr	0.70	0.70	0
NH ₃	4.90	4.90	0
Cl ₂ (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

10. MODELING:**A. 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.

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 PAER was deemed by the Department 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?
H ₂ S	13.94	1.533	1.97	No.
Br ₂	0.66	0.073	2.60	No.
HBr	9.93	1.092	0.17	Yes.
NH ₃	17.42	1.916	1.20	Yes.
Cl ₂ (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 mg/m^3 . This is a surrogate screening value. $1/100 = 0.10 \text{ ug}/\text{m}^3$.

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 ₂ S	139.4	50.29	Yes.
Br ₂	6.6	6.30	Yes.
Cl ₂ (HAP)	14.5	2.21	Yes.
Dibromochloropropane (HAP)	0.10	0.06	Yes.

11. 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	Aspen modeling.	-	Scrubber	98%	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.

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)
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 ₂ 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.
HB-02	Ideal gas calculation.	-	None.	-	No emission limit changes requested
HB-06	Maximum loading.	0.06 gr/ft ³	Baghouse	98%	No emission limit changes requested

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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-08	Aspen modeling.	-	Scrubber	Not quantified.	1,4 Dioxane (DEDO) newly introduced contaminant.
HB-09	Maximum loading.	0.02 gr/ft ³	Baghouse	90%	No emission limit changes requested
PT-01	EPA "Protocol for Equipment Leak Emission Estimates".		-	-	Some minor changes requested for fugitive limits.

12. 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 ₂ S, calculated to SO ₂ .	11	Annual	To confirm amine unit efficiency and resulting emissions at process flare and at NaHS loading stations.
SG-06, SG-07 SG-03	NO _x CO	7E 10	Annual	Permit limit (bubble) @ 98.5 ton/yr.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
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.

13. MONITORING OR CEMS

The following are parameters that must be monitored with CEMs or other monitoring equipment (temperature, pressure differential, etc), frequency of recording and whether records are needed to be 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 ₂ , CO and NO _x .
SG-06	Fuel inlet flow.	Flow meter.	Continuous.	Yes-SO ₂ , CO and NO _x .
SG-07	Fuel inlet flow.	Flow meter.	Continuous.	Yes-SO ₂ , CO and NO _x .
SR-01	Fuel inlet flow.	Flow meter.	Continuous.	Yes-SO ₂ , CO and NO _x .
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.

* Indicates 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)**
SR-01 SG-03 SG-06 SG-07	Purchased gas H ₂ S concentration.	Maximum 6.5 ppm (vol) H ₂ S	As purchased.	No.
SR-01	H ₂ S concentration of sweetened gas and resulting SO ₂ emissions.	22.1 lb/hr SO ₂ emissions.	Once per day.	Yes.
SR-01 SG-03 SG-06 SG-07	SO ₂ emissions.	0.1 lb/hr SO ₂ , each boiler. 22.1 lb/hr SO ₂ from flare. 4-source bubble: 97.8 ton/yr.	Once per month.	Yes.

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SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
SR-01 SG-03 SG-06 SG-07	NO _x emissions. CO emissions.	See permit for lb/hr limits. 4-source bubble: 98.5 ton/yr, for both NO _x and CO.	Once per month.	Yes.
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.

* Indicates 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)
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.

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
HB-06	10%	Department guidance.	Weekly observations.
HB-09	10%	Department guidance.	Weekly observations.

16. DELETED CONDITIONS:

The following Specific Conditions were included in the previous permit, but deleted for the current permitting action.

None

17. VOIDED, SUPERSEDED OR SUBSUMED PERMITS

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

Permit #
882-AR-3

18. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

 Lyndon Poole, P.E.