

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0573-AOP-R17 AFIN: 70-00040

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

El Dorado Chemical Company
4500 North West Avenue
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Shawn Hutchings

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Nitrogenous Fertilizer Manufacturing
NAICS Code: 325311

5. 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
5/22/2015	Modification	Modifications described below
08/04/2015	Administrative Amendment	Insignificant Activities Only
01/07/2015	Modification	Incorporate consent Decree requirements no physical changes.
05/20/2015	Administrative Amendment	Insignificant Activities Only
05/28/2015	Renewal	Included Modifications of 5/22/15 application. Described below.
08/24/2015	PSD Modification	Changes to incorporate final design of PSD modification of previous permit

6. REVIEWER'S NOTES:

El Dorado Chemical Company (EDCC) owns and operates a chemical manufacturing facility located at 4500 North West Avenue in El Dorado, Arkansas. This permit is the Title V renewal

for the facility. It also incorporates some changes to the PSD project of the previous permit, incorporates changes to resolve the issues of the appeal of the previous permit, and incorporates necessary requirements of the facility's consent decree with EPA.

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 has a CAO in routing for failed stack tests.

8. PSD APPLICABILITY:

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

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.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-41	PM ₁₀	PSD
SN-49, SN-53, SN-54, SN-56, SN-57, & SN-61	SO ₂ VOC CO NO _x GHG Opacity	PSD
SN-50	VOC CO GHG	PSD
SN-51	VOC CO GHG	PSD
SN-59	NO _x GHG Opacity	PSD
SN-61	NO _x	40 CFR Part 60, Subpart Db
SN-13	NO _x	40 CFR Part 60, Subpart G

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-59	NO _x	40 CFR Part 60, Subpart Ga
SN-07	SO ₂ and sulfuric acid mist	40 CFR Part 60, Subpart H
SN-65 and 66	There are no specific emission limits or pollutants identified, but the rules generally regulate HAPs	40 CFR Part 63, Subpart ZZZZ
SN-48, SN49, SN-54, & SN-61		40 CFR Part 63, Subpart DDDDD
SN-25		40 CFR Part 63, Subpart CCCCC
SN-65	CO, PM, NMHC + NO _x	40 CFR Part 60, Subpart IIII
SN-66	CO, VOC, NO _x	40 CFR Part 60, Subpart JJJJ

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

- a) The results of dispersion modeling are summarized below. PSD modeling is performed in two stages: the significance analysis and the full impact analysis. The significance analysis considers the net emissions change associated with PSD affected emissions units to determine if the increased emissions will have a significant impact upon the surrounding area. If the results of the significance analysis are below the corresponding Modeling Significance Levels, the full impact analysis is not required. EDCC modeled the impacts from the changes requested in this permit and added them to previous modeling. A summary of the results of the significance analysis is in the table below. Based upon these results a full impact analysis for CO is not required.

Pollutant	Averaging Period	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Significance Level ($\mu\text{g}/\text{m}^3$)
CO	1 – hour	1029	2,000
	8 – hour	335	500

Ambient air evaluations for pollutants other than CO are reserved.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Department procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

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). Only HNO_3 and H_2SO_4 increased over previous screened emission rates.

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
HNO_3	5.15	0.56	4.1	No
H_2SO_4	0.2	0.022	2.97	No

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 ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
HNO_3	51.5	36	Yes
H_2SO_4	2.0	0.61	Yes

12. CALCULATIONS:

SN	Emission Factor Source	Emission Factor	Control Equipment	Control Equipment Efficiency	Comments
05A and B	Vendor Specification	PM ₁₀ – 0.085 mg/acf	Brinks Scrubber	-	-
	Engineering Estimate	0.8 lb/hr NH ₃	Brinks Scrubber	99.5%	-
07	NSPS limit	SO ₂ – 92.0 lb/hr	Brinks Mist Eliminator	-	Remain the previous permitted limit
	Testing	H ₂ SO ₄ – 0.123 lb/ton	Brinks Mist Eliminator	-	-
08	Testing	NO _X - 52.2 lb/hr Ammonia – 40.0 lb/hr	Refrigeration SCR	• 98.5%	-
09	Testing	NO _X - 52.2 lb/hr Ammonia – 40.0 lb/hr	Refrigeration SCR	• 98.5%	-
10	AP-42	NO _X - 10.0 lb/ton	best operation	-	-
	Highest lb/hr from Stack Test results of 2001-2004	HNO ₃ – 0.389 x 1.25 x 40/8.5 = 2.3 lb/hr +1.1 lb/hr from car barn NO _X - 3.3 x 1.25 x 40/8.5 = 19.5 lb/hr	-	-	Maximum nitric acid production rate is 8.5 tons/hr, and maximum nitric acid blend production is 40 tons/hr. Stack test + 25% safety factor.
13	NSPS	3.0 lb/ton of acid	refrigerated absorption	-	-

18	Process Knowledge	PM ₁₀ – 0.033 lb/ton	Baghouse	-	-
19	PM – 50,556 scfm x 011677 lb/mmft ³ x 60 min/hr x 1.2 NH ₃ - 50,556 scfm x 25 ppm x 17.1 lb/lb-mol x lb-mol/385.2 ft ³ 60min/hr x 1.2	-	-	-	
25	TANKS 4.0.9	VOC	none	-	-
26	TANKS 4.0.9	NH ₃	none	-	-
27	Testing	PM 4.8E-7 lb/ton	none	-	-
28	Testing	PM 4.8E-7 lb/ton	none	-	-
30	AP-42 Section 5.2	H ₂ SO ₄ – 0.0034 lb/1000 gallons	none	-	-
31	SOCMI	NH ₃ – 0.5 lb/hr	none	-	-
32	SOCMI	NH ₃ – 1.6 lb/hr	none	-	-
33	Process Knowledge	NO _x – 0.1 lb/hr	none	-	-
	Process Knowledge	HNO ₃ – 0.1 lb/hr	none	-	-
34	Process Knowledge	PM ₁₀ – 0.7 lb/ton x 1.46 ton/hr	none	-	-
35A	Testing	PM ₁₀ – 0.1 lb/hr	baghouse	99%	-

35B	AP-42	PM 19.7 lb/hr	none		
38	$EF_{PM} = \text{Total liquid drift (lb/1000 gal)} \times \text{TDS Fraction (ppm)}$ $= 0.0834 \text{ lb/1000 gal} \times 1,560 \text{ ppm}$ $PM_{10} = EF_{PM} \times \text{flowrate}$ $= 9,000 \text{ gpm} \times EF_{PM}$			-	
40	TANKS Program	NH ₃ – 0.22lb/hr			-
41	Stack testing	NH ₃ – 10.0 lb/hr PM/PM10 – 4 lb/hr	Chemical steam scrubber	-	24-hr BACT limit is 13.8 lb/hr 30-day rolling BACT limit is 3.4 lb/hr
44	Mass Balance for sulfur oxides and sulfuric acid. Stack test from similar plant plus a safety factor of 25%.	Scrubber	-	-	
46	0.00013 lb/1000 gal	-	-	0.001% is design drift loss percent provided by manufacturer.	
13	NSPS EPA/DOJ Vendor Info	NO ₂ (3-hr): 3.0 lb/ton NO ₂ (3-hr): 1.0 lb/ton (excluding SSM) NO ₂ (rolling 365-days): 0.6 lb/ton NH ₃ : 20 ppm	SCR	95%	After installation of SCR and Tail gas preheater

65 and 66	AP-42 or NSPS	varied	none	--	
67	AP-42	0.02 lb/ton	None		
14 and 21	Vendor Specification	0.085 mg/acf PM	Scrubber	99.5 for ammonia	

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
10	NO _x	7E	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber
10	HNO ₃	Approved method	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber

SN	Pollutants	Test Method	Test Interval	Justification
07	SO ₂	6C	Initial performance test	NSPS Requirement
05A and B	PM ₁₀	Approved method	Initial and alternating annually.	Necessary to prove that PSD has not been triggered.
14, & 21	PM, PM ₁₀ , PM _{2.5}	Method 5 or 201A, and 202	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove that PSD has not been triggered.
21	NH ₃	Approved method	Annually until 3 consecutive passes, then once every 3 years	Necessary to prove adherence to the non-criteria pollutant strategy.
44	SO ₃ NO _x H ₂ SO ₄ HNO ₃	Approved method	Every five years	Necessary to prove adherence to the non-criteria pollutant strategy.
08 & 09	NH ₃	CTM-027 or equivalent	Every five years	Verify emissions
59	NH ₃	CTM-027 or equivalent	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove adherence to the non-criteria pollutant strategy.

SN	Pollutants	Test Method	Test Interval	Justification
49	PM PM ₁₀ PM _{2.5} SO ₂ VOC CH ₄ CO CO ₂ N ₂ O	Method 5 & 202 Method 201A & Method 202 Method 6C Method 25A Method 18 Method 10 Method 3A Method 320, ASTM D6348- 03 or other approved method	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
50	VOC CO ₂	25A 3A	One Time Test	Verify emissions
50	Methanol	18 or 25A	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
51	VOC Pre and Post Control CO NH ₃	25A 10 320	One Time Test	Verify emissions
51	Methanol CO ₂	18 or 25A 3A	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
61	PM PM ₁₀ PM _{2.5} SO ₂ VOC CO NO _x	Method 5 & 202 Method 201A & Method 202 6C 25A 10 7E	Annually until 2 consecutive passes, then once every 5 years	Verify emissions

SN	Pollutants	Test Method	Test Interval	Justification
13	NH ₃	CTM-027 or equivalent	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove adherence to the non-criteria pollutant strategy.

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 (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
13	NO _x	CEM	Continuously	Y
07	SO ₂ emission rate	CEM	Continuously	Y
08 & 09	NO _x	CEM	Continuously	Y
41 and 63	Ammonia and particulate emission rates	Daily sampling consisting of two 12-hour composite sample	Continuously	Y
59	NO _x	CEM	Continuously	Y
49	NO _x	CEM	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	Permit Limit	Frequency	Report (Y/N)
08 & 09	weak nitric acid production	304,775 tons/12 months	Monthly	Y
13	weak nitric acid production	140,000 tons/12 months	Monthly	Y
38, 46, 52, 60	Total Dissolve solid	1,560 ppm	Weekly	N
59	weak nitric acid production	461,725 tons/12 months	Monthly	Y
47	strong nitric acid production	5.2 tons per hour	Hourly	Y
47	strong nitric acid production	45,625 tons/12 months	Monthly	Y
10	Scrubber parameter	hydrogen peroxide concentration	Daily	N
07	Sulfuric acid production	200,750 ton/12 months	Monthly	Y
	Sulfuric acid production	550 tons of 100% sulfuric acid per day	Daily	Y
	Sulfuric acid emission limit	4.0 lb of SO ₂ per ton of acid	Continuously and averaged	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		production, expressed as 100% H ₂ SO ₄ , and based on a 3-hr average.	every 3-hours	
	Annual SO ₂ Emissions (tpy on a calendar basis)	N/A	Annually	N
30	Sulfuric acid shipped	200,750 tons/12 months	Monthly	Y
All E2 Plant	Production	525,600 tons/12 months	Monthly	Y
05A and B	Scrubber liquid flow rate for each scrubber Gas pressure drop across unit Scrubber liquid pH	225 gal/min (minimum) 2.5 in. H ₂ O (minimum) 0.5 – 6.0	Daily	N
41	BACT Limit PM	24-hour Average 0.223 lb/ton	Daily	Y
		30-day Average 0.054 lb/ton	Monthly	Y
All KT plant	Production	394,200 tons/12 months	Monthly	Y
14	Scrubber liquid flow rate Gas Pressure Drop Across Unit pH Exhaust Flow Rate	225 gal/min (minimum) 2.5 in H ₂ O (minimum) 0.5 – 6.0 131,452 acfm (maximum)	Daily	N
18	Baghouse Pressure Drop	0.5 – 8.0 in H ₂ O	Daily	N
21	Scrubber liquid flow rate	225 gal/min (minimum)	Daily	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	Gas Pressure Drop Across Unit pH Exhaust Flow Rate	2.5 in H ₂ O (minimum) 0.5 – 6.0 131,452 acfm (maximum)		
63	PM emissions	24-hour Average 0.223 lb/ton	Daily	Y
		30-day Average 0.054 lb/ton	Monthly	Y
	AN Production	547,500 tons/12 months	Monthly	Y
49	NH ₃ production	565,750 tons/12 months	Monthly	Y
	Natural gas usage	7,076.7 MMscf per 12 months	Monthly	Y
53	Natural gas usage	9.0 MMscf per 12 months	Monthly	Y
	Hours of operation	No more than 3 hours during any 24-hour period unless HRU outage	Daily	Y
51	Scrubber parameters	30 gpm 2 in H ₂ O	Daily	N
56	Natural gas usage	8.2 MMscf per 12 months	Monthly	Y
57	Natural gas usage	1.5 MMscf per 12 months	Monthly	Y
54	Natural gas usage	18.63 MMscf per 12 months	Monthly	Y
54, 56, 57	Flare maintenance	No limit	As required	Y
44	Amount of Oleum offload into the storage tank Percent strength of the Oleum Amount of mixed acid	394,000 tons 30% 219,000 tons	Monthly	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	produced.			
44	Scrubber liquid flow rate for each scrubber Gas pressure drop across unit Scrubber liquid pH	5.0 gal/min (minimum) 10 – 35 in. H ₂ O 0.5 – 7.5	Daily	N
61	Natural gas usage	618.35 MMscf per 12 months	Monthly	Y
25	usage of gasoline	40,000 gallons/12 months	Monthly	Y
29	Nitric Acid Shipped	250,000 tons/12 months	Monthly	Y
40	AN Loading tonnage	65,000,000 tons/12 months	Monthly	Y
58	Ammonia Loading	226,300 tons/12 months	Monthly	Y
65 and 66	Hours of operation	100 hours per calendar year	Monthly	Y
65 and 66	Engine maintenance	Change oil and filter every 500 hours of operation, or annually, whichever comes first; Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.	As needed	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
67	Prills Unloaded	36,500 tons per 12 months	Monthly	Y

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
08 & 09	10%	Compliance assurance for SCR operation	Daily Observation
07 & 13	10%	NSPS limit	Daily Observation
54, 61	5%	Department Guidance	Natural Gas Combustion
49, 59	0%	BACT limit	Daily Observation
53, 56, 57	0%	BACT limit	Natural Gas Combustion
05A and B, 18, 35A, 47, 63	5%	Department Guidance	Weekly Observation
52, 60	5%	Department Guidance	Weekly TDS
21, 27, 28	10%	Department Guidance	Daily Observation
14, 19	15%	Department Guidance	Daily Observation
34, 44	20%	Previous permit	Daily Observation
10, 38, 46	20%	Department Guidance	Weekly TDS
35B & 67	20%	Department Guidance	-
65	20%	Department Guidance	Annual Observation
66	5%	Department Guidance	Annual Observation

17. DELETED CONDITIONS:

Former SC	Justification for removal
	The previous permit had pre and post expansion project operating scenarios. The renewal application presented the facility post project only. The pre-expansion conditions were no longer needed and removed. Also conditions related to removed sources were deleted.

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)								
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	H ₂ S	NH ₃	HAPs	
									Single	Total
Molten Sulfur Storage Tank (formerly SN-23)	B-21								0.001	0.001
Diesel Storage Tank (500 Gallon) (formerly SN-24)	A-3			0.001					0.002	0.002
Diesel Storage Tank (2,000 Gallon) (formerly SN-45)	A-3			0.002					0.003	0.003
Total	A-3			0.003						
2 x Ammonia Flares	A-13	.01	.01	.01	.01	.01		0.1	.01	.01
Sulfur Unloading/Storage	A-13						0.13			
Ammonia Offloading	A-13							0.44		
Tier 2 Warehouse	A-13	.02								
Natural Gas Pipeline Knockout Pot	A-13			.14						
Portable Cooling Tower	A-13	.043								
Total	A-13	.46	0.01	0.15	0.01	0.01	0.13	0.54	0.01	0.01
Sulfuric Acid Solution Storage Tanks	B-21									

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
0573-AOP-R16

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 08-26-15

El Dorado Chemical Company
 Permit #: 0573-AOP-R17
 AFIN: 70-00040

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	1901.14
Permit Type	Modification	Permit Fee \$	1000

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	<input type="checkbox"/>
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0
Total Permit Fee Chargeable Emissions (tpy)	-447.79
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 condensable 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		120.9	114.7	-6.2	-6.2	114.7
PM ₁₀		95.1	94.3	-0.8		
SO ₂		403.4	402.9	-0.5	-0.5	402.9
VOC		184.8	37.3	-147.5	-147.5	37.3
CO		161.7	130.1	-31.6		
NO _x		724.7	708	-16.7	-16.7	708
CO ₂ e	<input type="checkbox"/>	2,773,524.40	1,207,090	-1566434.4		
Arsenic*	<input type="checkbox"/>	0.07	0.06	-0.01		

