

STATEMENT OF BASIS

for the issuance of Air Permit # 1085-AOP-R7.

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

FutureFuel 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: 9/4/07, 9/7/07

6. REVIEWER'S NOTES:

FutureFuel Chemical Company is proposing to produce aldehyde products that will require the addition of one new distillation column, two new reactors, a safety stack for pressure vessel emergency relief, a hot oil system, a water scrubber, and four new tanks. The emission points for the new Aldehyde Processing Section are the hot oil system (4P05-01), the water scrubber (4P05-02), equipment fugitives (4PSR-FUG), and the RTO (5N09-01).

Total criteria pollutant emissions for this process are 2.8 tpy particulate, 6.5 tpy SO₂, 14.3 tpy CO, 6.9 tpy NO_x, and 10.8 tpy VOC. Total non-criteria pollutants are limited to 1.95 tpy of a single HAP or 4.75 tpy combined HAP to keep this change within minor modification thresholds

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-AR-1

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 _x	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 T-242 T-243 TFB-30 T-212A VC-PT-01 VC-PT-02	VOC	NSPS Kb
Utilities Section (coal processing activities).	PM	NSPS Y
DIPB Production (equipment Leaks, benzene)	Benzene	NESHAP 61 J
DIPB Production	VHAP	NESHAP 61 V

Source	Pollutant	Regulation
(equipment leaks, VHAP)		
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 ₂ PM	NESHAP 63 EEE
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-R6	Air Permit 1085-AOP-R7	Change
PM/PM ₁₀	339.3	342.1	+2.8
SO ₂	6308.1	6314.6	+6.5
VOC	691.8	702.6	+10.8
CO	1858.7	1872.6	+14.3
NO _x	787.8	794.7	+6.9

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 1085-AOP-R6	Air Permit 1085-AOP-R7	Change
Inorganics (non-VOC HAPs)	940.0	940.0	0
Organic HAPs	691.8	693.75	+1.95
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:

AERMOD was used in this scenario, with only one year of meteorological data, Little Rock 2004.

Criteria Pollutants

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu\text{g}/\text{m}^3$)	Averaging Time	Highest Concentration ($\mu\text{g}/\text{m}^3$)	Background	% of NAAQS
PM ₁₀	90.8	50	Annual	2.24	24	26.24%
		150	24-hour	20.49	39	39.67%
SO ₂	1441	80	Annual	8.06114	7.9	19.95%
		1,300	3-hour	188.28230	23.6	16.29%
		365	24-hour	71.26530	15.7	23.88%
NO _x	182	100	Annual	2.31167	21.6	23.91%
VOC	187.2	0.12	1-hour (ppm)	Annual NO _x greater than VOC	N/A	
CO	453.9	10,000	8-hour	141.89662c	2748.4	28.90%
		40,000	1-hour	495.24622	3435.6	9.82%

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 FutureFuel 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.

Process Area	Source	Emission Factor
Plantwide Applicable Limit Emission Estimation for VOC		
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
	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

Process Area	Source	Emission Factor
	7M01-02	28.75 lb/thousand gallons wastewater
	7M01-04	2.6 lb/thousand gallons wastewater
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
	6N01-02	15.2 lb/thousand gallons diesel
	6N01-03	307.7 lb/thousand gallons gasoline
Aldehyde Processing	4P05-01	68.01 lb/hr, uncontrolled, 90% DE
	SB-01	1.11 lb/hr * 2 safety factor 10 bakeouts per reactor/yr 35 hrs per bakeo
	4PSR-FUG	Pumps, valves, agitators, sample points
Plantwide Applicable Limit Emission Estimation for PM/PM ₁₀		
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

Process Area	Source	Emission Factor
	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
Isopropyl Benzene Process	5N03-54	1.51 lb/thousand gallons throughput through 5NDIPB-TNK
Cement Plant	7N02-01	0.21 lb/hour of operation
Wood Pellet Production	6Q01	18,030 scfm @ 0.02 gr/scfm
Aldehyde Processing	4P05-01	1.3 lb/1000 gal x 2 safety factor
	4P05-02	3.18 lb/hr x 2 safety factor 10 bakeouts per reactor/yr 35 hrs per bakeout
Plantwide Applicable Limit Emission Estimation for SO ₂		
Process Area	Source	Emission Factor
Organic Chemical Intermediates	5N09-1	8.4 lb/hour of operation

Process Area	Source	Emission Factor
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
Aldehyde Processing	4P05-01	Fuel oil, 500 ppm sulfur x 2 safety factor 367.6 lb oil/hr
Plantwide Applicable Limit Emission Estimation for CO		
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

Process Area	Source	Emission Factor
Isopropyl Benzene Process	5N03-54	6.81 lb/thousand gallons throughput through 5NDIPB-TNK
Aldehyde Processing	4P05-01	84 lb CO/mmscf x 2 safety factor
Aldehyde Processing	4P05-02	14.26 lb/hr x 2 safety factor 10 bakeouts per reactor/yr 35 hrs per bakeout
Plantwide Applicable Limit Emission Estimation for NO _x		
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
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
Aldehyde Processing	4P05-01	0.00284 lb NO _x /lb fuel 85% efficiency 367.6 lb fuel/hr x 1.66 safety factor

Process Area	Source	Emission Factor
Plantwide Applicable Limit Emission Estimation for HCl		
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	SO2 VOC CO NOx	6C 25A 10 7E	Every five years.	To ensure compliance with the lb/hr emission limits.
6M01-01	NOx	7E	One time.	To ensure compliance with the lb/hr emission limits.
6M03-05	VOC PM/PM ₁₀ NOx SO ₂	25A 5 7E 6C	Annually.	To ensure compliance with the lb/hr emission limits.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
	For MACT: Dioxins Furans Mercury Lead Cadmium Arsenic Beryllium Chromium CO Hydrocarbons HCl Cl ₂ 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	Steam production	Not specified	Continuously	no
	CO	CEMS	Continuously	no
	Ash production	Not specified	Continuously	no
	ESP power input	Gauge	daily	no
	Coal, wood, biosludge, and liquid feed rates	Not specified	daily	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
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 ± 1 percent, and specific gravity monitoring device having accuracy of ± 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	Water content, content of inorganics	Not specified	Continuously while burning waste	
	pressure drop across scrubber, scrubber flow rate, pH	Flow meter, gauge, pH meter	daily	no
	CO	CEMS	continuous	no
	waste chemical feed rate, natural gas feed rate, and fuel oil 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	scrubbing liquor flow rate	0.4 gpm minimum	30-minute	no

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
4P94-02				
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
6Q01	pressure drop across fabric filter	Pressure gauge	daily	no
SB-01	Scrubber flow rate	Flow meter	Daily	N
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	Power input to the ESP	Not specified	Continuously	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

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)* *
6M03-05	opacity observations	20%	daily	no
6M03-05	Pressure drop across the scrubber, fluid flows, pH	71" W.C., 475 gpm, 300 gpm, 4.0 pH	Continuously	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	Biodiesel production	250 MMgal/yr	Monthly	yes
	solvent throughput	5880 lb/hr	daily	no
4P02-01 4P94-01 4P94-02	scrubber liquor flow rate	at least 0.4 gal/min	30-minute	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	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	Biodiesel production	31,000,000 gal/yr	monthly	No

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)* *
TFS-53 TFS-54 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				
6Q01	pressure drop across fabric filter	FOP	daily	No
SB-01	Scrubber flow rate	FOP	Daily	N
Aldehyde Section	vinyl compounds produced	45 million lbs/yr	Monthly	N
Aldehyde Section	Organic HAP	1.95/4.75	Monthly	Y

* 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

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
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
6Q01	5%	Particulate emission rates do not justify an opacity limit any greater than 5%.	Weekly Method 22 Monthly Method 9
4P05-01	5%/20%	Typical of fuel types used	Weekly Method 22 Monthly Method 9 Weekly Method 9 for fuel oil
4P-05-02	5%	Typical of control device	Weekly Method 22 Monthly Method 9

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-R6

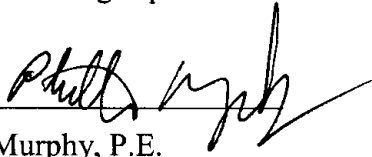
Permit#: 1085-AOP-R7

AFIN #: 3200036

Page 19 of 19

18. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

A handwritten signature in black ink, appearing to read "Phil Murphy", written over a horizontal line.

Phil Murphy, P.E.

