

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

217/782-2113

TITLE V - CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT
and
TITLE I PERMIT¹

PERMITTEE

Ethyl Petroleum Additives, Inc.
Attn: Environmental Manager
501 Monsanto Avenue
Sauget, Illinois 62201

Application No.: 95120012 I.D. No.: 163121AAB
Applicant's Designation: Ethyl Sauget Date Received: December 4, 1995
Operation of: Miscellaneous Organic Chemical Manufacturing
Date Issued: TO BE DETERMINED Expiration Date²: DATE
Source Location: 501 Monsanto Avenue, Sauget, St. Clair County
Responsible Official: Kang C. Buoy, Plant Manager

This permit is hereby granted to the above-designated Permittee to OPERATE a miscellaneous organic chemicals manufacturing facility, pursuant to the above referenced permit application. This permit is subject to the conditions contained herein.

If you have any questions concerning this permit, please contact Jonathan Sperry at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JS:jar

cc: Illinois EPA, FOS, Region 3

¹ This permit may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the CAA and regulations promulgated thereunder, including 40 CFR 52.21 - federal PSD and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within this permit.

² Except as provided in Condition 8.7 of this permit.

TABLE OF CONTENTS

		<u>PAGE</u>
1.0	SOURCE IDENTIFICATION	5
	1.1 Source	
	1.2 Owner/Parent Company	
	1.3 Operator	
	1.4 General Source Description	
2.0	LIST OF ABBREVIATIONS/ACRONYMS USED IN THIS PERMIT	6
3.0	INSIGNIFICANT ACTIVITIES	8
	3.1 Identification of Insignificant Activities	
	3.2 Compliance with Applicable Requirements	
	3.3 Addition of Insignificant Activities	
4.0	SIGNIFICANT EMISSION UNITS AT THIS SOURCE	14
5.0	OVERALL SOURCE CONDITIONS	19
	5.1 Source Description	
	5.2 Applicable Regulations	
	5.3 Non-Applicability of Regulations of Concern	
	5.4 Source-Wide Operational and Production Limits and Work Practices	
	5.5 Source-Wide Emission Limitations	
	5.6 General Recordkeeping Requirements	
	5.7 General Reporting Requirements	
	5.8 General Operational Flexibility/Anticipated Operating Scenarios	
	5.9 General Compliance Procedures	
6.0	NOT APPLICABLE TO THIS PERMIT	34
7.0	UNIT SPECIFIC CONDITIONS	35
	7.1 Unit 258: Batch Reactor Trains Control: Condensers, Scrubber, Flare	
	7.2 Unit 258: Drum Washing Station Control: Venturi Scrubber	
	7.3 Unit 258: Sulfonator Control: Scrubbers, Electrostatic Precipitator	
	7.4 Unit 258: ABSA Receiver Tank	
	7.5 RESERVED	
	7.6 Unit 258: Neutralizer and Still Control: Condenser	

7.7	Unit 258: Filter Aid Weigh Bins Control: Baghouses	
7.8	Unit 266: Batch Reactor Trains Control: Scrubbers, Condensers, Flare, Baghouse	
7.9	Unit 266: Storage Tank	
7.10	Unit 280: Batch Reactor Trains Control: Scrubbers, Condensers, Flare	
7.11	Unit 280: Tanks Control: Scrubber, Flare	
7.12	Unit 290: Tanks	
7.13	Unit 290: Batch Reactor Trains Control: Condensers, Scrubbers, Flare	
7.14	Unit 290: Carbon Disulfide Tank Control: CS ₂ Recovery System, Flare	
7.15	Unit 290: Wastewater Hold Tank Control: Carbon Drums	
7.16	Unit 267: Batch Reactor Trains Control: Condensers, Scrubbers, Flare, Carbon Adsorbers	
7.17	Unit 267: Storage Tanks Control: Carbon Drums	
7.18	Unit 268: Batch Reactor Trains Control: Condensers	
7.19	Unit 270: Batch Reactor Trains Control: Condensers, Scrubbers, Flare	
7.20	Unit 270: Storage Tanks Control: Condenser	
7.21	Unit 270: Silos and Weigh Bins Control: Baghouses	
7.22	Unit 275: Batch Reactor Trains Control: Condensers, Scrubbers	
7.23	Unit 275: Storage Silos and Weigh Bins Control: Baghouses, Filter	
7.24	Cooling Towers	
7.25	Steam Boilers	
7.26	Loading Operations Control: Carbon Drums	
8.0	GENERAL PERMIT CONDITIONS	241
8.1	Permit Shield	
8.2	Applicability of Title IV Requirements	
8.3	Emissions Trading Programs	
8.4	Operational Flexibility/Anticipated Operating Scenarios	
8.5	Testing Procedures	
8.6	Reporting Requirements	
8.7	Obligation to Comply with Title I Requirements	

	<u>PAGE</u>
9.0 STANDARD PERMIT CONDITIONS	247
9.1 Effect of Permit	
9.2 General Obligations of Permittee	
9.3 Obligation to Allow Illinois EPA Surveillance	
9.4 Obligation to Comply with Other Requirements	
9.5 Liability	
9.6 Recordkeeping	
9.7 Annual Emissions Report	
9.8 Requirements for Compliance Certification	
9.9 Certification	
9.10 Defense to Enforcement Actions	
9.11 Permanent Shutdown	
9.12 Reopening and Reissuing Permit for Cause	
9.13 Severability Clause	
9.14 Permit Expiration and Renewal	
10.0 ATTACHMENTS	
10.1 Attachment 1 - Example Certification by a Responsible Official	1-1
10.2 Attachment 2 - Particulate Matter Emissions from Process Emission Units	2-1
10.3 Attachment 3 - Tables of contemporaneous increases and decreases	3-1
10.4 Attachment 4 - ACS Permit Findings	4-1
10.5 Attachment 5 - Guidance on Revising This Permit	5-1
10.6 Attachment 6 - Form 199-CAAPP, Application For Construction Permit (For CAAPP Sources Only)	6-1
10.7 Attachment 7 - Guidance on Renewing This Permit	7-1

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

1.0 SOURCE IDENTIFICATION

1.1 Source

Ethyl Petroleum Additives, Inc.
501 Monsanto Avenue
Sauget, Illinois 62201
616/583-1311

I.D. No.: 163121AAB
Standard Industrial Classification: 2869, Industrial Organic
Chemicals

1.2 Owner/Parent Company

Ethyl Corporation
330 South Fourth Street
Richmond, Virginia 23219

1.3 Operator

Ethyl Petroleum Additives, Inc.
501 Monsanto Avenue
Sauget, Illinois 62201

Donna K. Parks
618/583-1323

1.4 General Source Description

Ethyl Petroleum Additives, Inc. is located at 501 Monsanto Avenue in Sauget, Illinois. The source manufactures various miscellaneous organic chemicals, including lubricant additives, for the petroleum industry. In addition, the source packages these materials for transportation off-site for further processing.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

2.0 LIST OF ABBREVIATIONS/ACRONYMS USED IN THIS PERMIT

AB	Alkylbenzene
ABSA	Alkylbenzene Sulfonic Acid
ACS	Alternative Control Strategy (35 IAC 202)
Act	Illinois Environmental Protection Act [415 ILCS 5/1 et seq.]
AlCl ₃	Aluminum Chloride
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Other Sources (and Supplements A through F), USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
°C	degrees Celsius
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CS ₂	Carbon Disulfide
DCC	Direct Contact Condenser
DFA	Diesel Fuel Additive
dscf	dry standard cubic feet
ERMS	Emissions Reduction Market System
ESP	Electrostatic Precipitator
°F	degrees Fahrenheit
ft	feet
ft ³	cubic feet
g-mole	gram-mole
gal	gallon
gr	grain (7000 grains = 1 pound)
H ₂ S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HCl	Hydrochloric Acid
hr	hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
ILCS	Illinois Compiled Statutes
Illinois EPA	Illinois Environmental Protection Agency
°K	degrees Kelvin
kcal	kilocalorie
kg	kilogram
kPa	kilopascal
kW	kilowatts
lb	pound

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

lb-mole	pound-mole
m	meter
m ³	cubic meter
Mg	megagram
min	minute
MJ	megajoule
mmBtu	Million British thermal units
mmHg	millimeters of mercury
MW	megawatt
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	Nitrogen Oxides
NSPS	New Source Performance Standards
PBSA	Polybutenyl Succinic Anhydride
pH	a measure of the acidity or alkalinity of a solution
PM	Particulate Matter
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
ppm	parts per million
ppmv	parts per million by volume
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
°R	degrees Rankin
RMP	Risk Management Plan
scf	standard cubic feet
scfm	standard cubic feet per minute
scm	standard cubic meter
sec	second
SIB	Sulfurized Isobutylene
SO ₂	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
T1	Title I - identifies Title I conditions that have been carried over from an existing permit
T1N	Title I New - identifies Title I conditions that are being established in this permit
T1R	Title I Revised - identifies Title I conditions that have been carried over from an existing permit and subsequently revised in this permit
TOC	Total Organic Compounds
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
VOM	Volatile Organic Material
yr	year
ZDDP	Zinc Dialkyldithiophosphate

3.0 INSIGNIFICANT ACTIVITIES

3.1 Identification of Insignificant Activities

The following activities at the source constitute insignificant activities as specified in 35 IAC 201.210:

3.1.1 Activities determined by the Illinois EPA to be insignificant activities, pursuant to 35 IAC 201.210(a)(1) and 201.211, as follows:

Emission Unit Designation	Description of Emission Unit
Unit 258 Processes	
21-0510	Air Strippers
35-2782 and 35-3073	Alkylbenzene or Olefin Storage Tanks
35-0540	Alkylbenzene Containment Tank
35-0134, 35-0135, 34-0340, 34-0590	Alkylbenzene Storage Tanks
35-0180 and 35-0763	Ethylene Glycol Storage Tanks
35-0510 and 35-0515	Wastewater Storage Tank
35-1539	Flare Seal Pot
35-0505	Benzene Containment Tank
Unit 280 Processes	
35-0104 and 35-2203	Hydrochloric Acid Storage Tanks with Water Jet Scrubbers
Unit 290 Processes	
35-0275	Hydrazine Storage Tank
Unit 267 Processes	
35-0107	Quench Tank with Carbon Drums
14-0162	Hydrochloric Acid Scrubber Outlet Stream Filter
Unit 270B Processes	
35-0803	Therminol HC
Unit 275 Processes	
35-0702	Therminol Tank
35-0110	Maleic Anhydride Storage Tank

3.1.2 Activities that are insignificant activities based upon maximum emissions, pursuant to 35 IAC 201.210(a)(2) or (a)(3), as follows:

Emission Unit Designation	Description of Emission Unit
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PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit Designation	Description of Emission Unit
General Emission Units	
Washing	Railroad Tank Car Washing
Cleaning	Filter Cleaning
Blenders A and B	Two (2) 10-Gallon Blend Pots
Filter	Lube Oil Filter
Unit 258 Processes	
14-0530	Lube Oil Polishing Filter
14-0755	Polishing Filter
14-0816 and 14-0817	Lube Oil Filters
35-0122 and 35-0575	Olefin Storage Tanks
35-0565	Sulfuric Acid Storage Tank
35-0570	Sulfur Storage Tank
35-4031 and 35-4032	Sulfonator Digester Tanks
05-8033	Oxidation Tower
Unit 266 Processes	
Unit 266 Unloading	Phosphorus Pentasulfide Unloading System
Unit 266 Loading	Tank Car Loading (Mode 2 product)
Unit 266 Loading	Truck Loading (condensate)
Unit 266 Unloading	Raw Material Unloading
Unit 266 Filtering	Intermediate and Final Product Filtering
Unit 280 Processes	
35-0625	Kerosene Tank
35-0105	Chilled Kerosene Tank
35-0106	n-Propanol Tank with Condenser
35-0117 and 35-0118	Alcohol Tanks, vent to flare
35-0120	Sulfur Monochloride Tank with Scrubber
35-0114 and 35-0307	Brine Storage Tanks, vent to scrubber system
41-0300	Sulfur Weigh Bin
35-0112 and 35-0113	Isobutylene Storage Tanks, vent to flare
Unit 290 Processes	
35-0530	Mercaptan Storage Tank with Carbon Drums
35-0800	Chilled Glycol Storage Tank
35-0225	Peroxide Storage Tank
14-0200 and 14-0615	Product Filters
35-0850	Raw Material Storage Tank
Unit 267 Processes	

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit Designation	Description of Emission Unit
35-0002, 35-0003, 35-0107, 35-0300, 35-0420, 35-0670, 35-1112, 35-1121, and 35- 2287	Raw Material Storage Tanks
14-0111	Lubricating Oil Polishing Filter
Unit 267 Drumming	By-product Drumming
Unit 268 Processes	
35-0313, 35-0400, 35-0402, 35-0406, 35-0510, 35-0600, 35-0818, 35-0904, and 35- 0905	Raw Material Storage Tanks
Unit 268 Loading	Railcar Loading Docks
Unit 268 Loading	Tank Truck Loading Docks
Unit 268 Drumming	Drumming Stations
Unit 270A Processes	
35-2124, 35-0701, 35-0717, 35-0100, and 35-0118	Raw Material Storage Tanks
43-0120	Separator
14-0431, 14-0707, 14-0930, 14-0931, 14-0715, 14-0438, 14-0936, 14-0223, 14-0233, and 14-0557	Lubricating Oil Filters
35-0520	Air Stripper Feed Tank
Unit 270B Processes	
35-0308	Lubricating Oil Storage Tank
35-0151	Polybutene Storage Tank
14-0722 and 14-0723	Product Filters
14-0716	Filter
Unit 275 Processes	
14-0301	PBSA Filter
14-0611	Product Filter
35-0101, 35-0114, and 35- 0191	Polybutene Storage Tanks
35-0141	Polyamine Storage Tank
35-0700	TEPA Storage Tank
35-0209	Maleic Anhydride Receiver
35-0275	Hotwell
35-0302	PBSA Precoat Tank
35-0303	PBSA Filter Feed Tank
35-0401	Amine Weigh Tank
35-0612	Condensate Catch Tank
35-0815	Chlorine Scrubber Hold Tank
Unit 283 Processes	
35-125, 35-0819, 35-1915, 35-1916, 35-1974, 35-2052, 35-2576, and 35-2577	Storage Tanks

PROPOSED CAAPP PERMIT
 Ethyl Petroleum Additives, Inc.
 I.D. No.: 163121AAB
 Application No.: 95120012
 November 18, 2003

Emission Unit Designation	Description of Emission Unit
35-595	Kerosene Storage Tank
35-0209 and 35-0210	Diesel Fuel Storage Tanks

3.1.3 Activities that are insignificant activities based upon their type or character, pursuant to 35 IAC 201.210(a) (4) through (18), as follows:

Direct combustion units designed and used for comfort heating purposes and fuel combustion emission units as follows: (A) Units with a rated heat input capacity of less than 2.5 mmBtu/hr that fire only natural gas, propane, or liquefied petroleum gas; (B) Units with a rated heat input capacity of less than 1.0 mmBtu/hr that fire only oil or oil in combination with only natural gas, propane, or liquefied petroleum gas; and (C) Units with a rated heat input capacity of less than 200,000 Btu/hr which never burn refuse, or treated or chemically contaminated wood [35 IAC 201.210(a) (4)].

Equipment used for filling drums, pails, or other packaging containers, excluding aerosol cans, with soaps, detergents, surfactants, lubricating oils, waxes, vegetable oils, greases, animal fats, glycerin, sweeteners, corn syrup, aqueous salt solutions, or aqueous caustic solutions [35 IAC 201.210(a) (8)].

Storage tanks of organic liquids with a capacity of less than 10,000 gallons and an annual throughput of less than 100,000 gallons per year, provided the storage tank is not used for the storage of gasoline or any material listed as a HAP pursuant to Section 112(b) of the CAA [35 IAC 201.210(a) (10)].

Storage tanks of any size containing virgin or re-refined distillate oil, hydrocarbon condensate from natural gas pipeline or storage systems, lubricating oil, or residual fuel oils [35 IAC 201.210(a) (11)].

Storage tanks of any size containing exclusively soaps, detergents, surfactants, glycerin, waxes, vegetable oils, greases, animal fats, sweeteners, corn syrup, aqueous salt solutions, or aqueous caustic solutions, provided an organic solvent has not been mixed with such materials [35 IAC 201.210(a) (17)].

Loading and unloading systems for railcars, tank trucks, or watercraft that handle only the following liquid materials, provided an organic solvent has not been mixed with such materials: soaps, detergents, surfactants, lubricating oils, waxes, glycerin, vegetable oils, greases, animal fats, sweetener, corn syrup, aqueous salt solutions, or aqueous caustic solutions [35 IAC 201.210(a)(18)].

3.1.4 Activities that are considered insignificant activities pursuant to 35 IAC 201.210(b).

3.2 Compliance with Applicable Requirements

Insignificant activities are subject to applicable requirements notwithstanding status as insignificant activities. In particular, in addition to regulations of general applicability, such as 35 IAC 212.301 and 212.123 (Condition 5.2.2), the Permittee shall comply with the following requirements, as applicable:

3.2.1 For each cold cleaning degreaser, the Permittee shall comply with the applicable equipment and operating requirements of 35 IAC 215.182, 218.182, or 219.182.

3.2.2 For each particulate matter process emission unit, the Permittee shall comply with the applicable particulate matter emission limit of 35 IAC 212.321 or 212.322. For example, the particulate matter emissions from a process emission unit shall not exceed 0.55 pounds per hour if the emission unit's process weight rate is 100 pounds per hour or less, pursuant to 35 IAC 266.110.

3.2.3 For each organic material emission unit that uses organic material, e.g., a mixer or printing line, the Permittee shall comply with the applicable VOM emission limit of 35 IAC 215.301, 218.301, or 219.301, which requires that organic material emissions not exceed 8.0 pounds per hour or do not qualify as photochemically reactive material as defined in 35 IAC 211.4690.

3.2.4 For each organic material emission unit that is part of a batch manufacturing process and exempt from the control requirements of 35 IAC 219 Subpart V (e.g., pilot plant equipment), the Permittee shall maintain uncontrolled total annual mass emissions of VOM less than or equal to 30,000 pounds per year from each batch process train. The recordkeeping and reporting requirements of 35 IAC 219.505 shall apply to such emission units.

3.3 Addition of Insignificant Activities

- 3.3.1 The Permittee is not required to notify the Illinois EPA of additional insignificant activities present at the source of a type that is identified in Condition 3.1, until the renewal application for this permit is submitted, pursuant to 35 IAC 201.212(a).
- 3.3.2 The Permittee must notify the Illinois EPA of any proposed addition of a new insignificant activity of a type addressed by 35 IAC 201.210(a) and 201.211 other than those identified in Condition 3.1, pursuant to Section 39.5(12)(b) of the Act.
- 3.3.3 The Permittee is not required to notify the Illinois EPA of additional insignificant activities present at the source of a type identified in 35 IAC 201.210(b).

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

4.0 SIGNIFICANT EMISSION UNITS AT THIS SOURCE

Emission Unit	Description	Date Constructed	Emission Control Equipment
General Emission Units			
500-15-0110	99.7 mmBtu/hr Boiler	10/1997	None
500-15-0210	99.7 mmBtu/hr Boiler	10/1997	None
500-15-0310	99.7 mmBtu/hr Boiler	10/1997	None
39-0955	Unit 270 Cooling Tower	1985	None
39-0227	Unit 280 Cooling Tower	Prior to 1971	None
R-100	Unit 290 Truck Loading Docks (wastewater condensate)	Unknown	Carbon Drums
Unit 258 Processes			
27-0105	AB Reactor	6/1976	Condensers, Scrubber 33-0549, Flare 36-0219
27-0106	AB Reactor	9/1977	
27-0550	AB Reactor	11/1980	
35-0580	Benzene Storage Tank T-580 (35,000 gallons)	1980	Scrubber 33-0549, Flare 36-0219
35-0589	Benzene/Water Separator Feed Tank T-589	10/1980	
35-0588	Benzene/Water Separator Tank T-588	1/1981	
35-0141	Recovered Benzene Feed Tank	1964	
35-0608/0201	Wastewater Hold Tank	10/1980	Condenser 17-0202, Scrubber 33-0549, Flare 36-0219
35-0501	Steam Sparge Tank	1998	
Unit 258 Washing	Drum Washing Station	Unknown	Venturi Scrubber 10-AlCl3
15-3011	Sulfur Burner	1987	Acid Scrubber 33-7011, ESP 21-8021, Caustic Scrubber 33-8031
27-3012	Converter	1987	
43-3021	Oleum Separator	1987	
27-4011	Sulfonator	1/1987	Feed Scrubber 33-9011, ESP 21-8021, Caustic Scrubber 33-8031
35-0553	ABSA Receiver Tank (12,000 gallons)	10/1978	None
27-0620	Neutralizer	6/1980	None
27-0607	Still	Prior to 1971	Condenser 17-0637
41-0205	South Filter Aid Weigh Bin	Unknown	Baghouse 09-0205

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit	Description	Date Constructed	Emission Control Equipment
41-0206	North Filter Aid Weigh Bin	Unknown	Baghouse 09-0206
Unit 266 Processes			
27-0142	Thio Acid Reactor	1/1981	Condensers, H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011
27-1244	Thio Acid Reactor	11/1985	
27-0143	Degasser/Hold Tank	6/1977	H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011
27-0195	Degasser/Hold Tank	3/1978	
27-2425	Neutralizer	1985	Condensers, Scrubbers, Flare 36-0011, Baghouse 09-1425
27-1426	Neutralizer	1985	
35-0300	Isopropanol Storage Tank (35,000 gallons)	1981	None
35-0340	Raw Material Storage Tank (48,000 gallons)	Prior to 1984	Carbon Drums
35-0310	Raw Material Storage Tank (35,000 gallons)	Prior to 1984	None
35-0315	Raw Material Storage Tank (35,000 gallons)	Prior to 1984	None
35-0320	Raw Material Storage Tank (35,000 gallons)	Prior to 1984	None
35-0184	Raw Material Blend Tank (2,950 gallons)	Unknown	None
35-0205	Product Storage Tank (20,000 gallons)	Prior to 1984	Scrubber, Flare
35-0135	Alcohol Condensate Storage Tank (7,500 gallons)	Unknown	Carbon Drums
35-3217	Filter Feed Tank (7,500 gallons)	Unknown	None
35-3218	Filter Feed Tank (7,500 gallons)	Unknown	None
35-3219	Filter Feed Tank (3,000 gallons)	Unknown	None
35-0100	Wash Oil Storage Tank (3,000 gallons)	Unknown	None
35-3220	Filtrate Receiver Tank (15,000 gallons)	Prior to 1984	None
35-2066	Product Storage Tank (27,000 gallons)	Prior to 1984	None

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit	Description	Date Constructed	Emission Control Equipment
35-2087	Product Storage Tank (27,000 gallons)	Prior to 1984	None
35-0325	Product Storage Tank (48,000 gallons)	Prior to 1984	None
35-0330	Product Storage Tank (48,000 gallons)	Prior to 1984	None
35-2088	Product Storage Tank (48,000 gallons)	Prior to 1984	None
Unit 280 Processes			
27-0201	First Stage SIB Reactor	10/1975	HCl Scrubbers, Flare 36-0011
27-0301	Second Stage SIB Reactor	3/1982	Condensers, H ₂ S Scrubbers (33-2421 and 33-2422), Flare 36-0011
27-0302	Second Stage SIB Reactor	3/1982	
27-2501	Brine Acidifier	1969	H ₂ S Scrubbers (33-2421 and 33-2422), Flare 36-0011
35-0102	Adduct Tank (7,000 gallons)	1982	Scrubber 10-2236, Flare 36-0011
35-0103	Adduct Tank (7,000 gallons)	1975	
35-0107	Adduct Tank (7,000 gallons)	1975	
Unit 290 Processes			
35-0840	Raw Material Storage Tank (60,270 gallons)	1992	None
35-0845	DFA/Generic Blend Storage Tank (150,000 gallons)	1992	None
35-0850	Solvent Storage Tank (60,000 gallons)	1993	None
35-0125	Carbon Disulfide Storage Tank (30,000 gallons)	1995	CS ₂ Recovery System, Flare 36-0011
27-0200	First Stage Thiadiazole Reactor	1989	Condensers, Scrubbers, CS ₂ Recovery System, Flare 36-0011
27-0100	Second Stage Thiadiazole Reactor	1989	Condensers, Scrubber 05-0600, Carbon Drums
35-0300	Wastewater Hold Tank	1996	Carbon Drums

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit	Description	Date Constructed	Emission Control Equipment
Unit 267 Processes			
27-0119	Reactor	1949	Condensers, Scrubbers, Flare 36-0011
27-0117	Reactor	8/1976	
27-0118	Reactor	9/1972	
35-0006	Xylene Storage Tank (8,800 gallons)	1976	None
35-0190	Dicyclopentadiene Storage Tank (10,000 gallons)	1987	Carbon Drums
27-0121	Antioxidant Reactor	2/1979	Scrubbers, Flare 36-0011
27-0125	Gear Lube Blend Reactor	8/1988	Carbon Adsorbers 33-0125-1 and 33- 0125-2
Unit 268 Processes			
27-0100	Specialty Blend Reactor	1/1976	None
27-0200	Specialty Blend Reactor	1976	None
27-0300	Specialty Blend Reactor	1/1976	None
27-0450	Preblend Reactor	1986	Condensers
Unit 270 Processes			
27-0401	Metallizer Reactor	Prior to 1971	Condenser 17-0409, DCC 05-0416
27-0402	Metallizer Reactor	Prior to 1971	Condenser 17-0410, DCC 05-0417
27-0900	Metallizer Reactor	8/1985	Condenser 17-0905, DCC 05-0908
501	Methanol Still Column	Prior to 1971	Condenser 17-0502, Condenser 17-0611
35-0608	Recovered Hexane Storage Tank (14,000 gallons)	Prior to 1984	Condenser 17-0611
35-0609	Recovered Hexane Storage Tank (3,500 gallons)	1986	Condenser 17-0611
35-0607	Fresh Hexane Storage Tank (7,070 gallons)	1961	Condenser 17-0611
35-0612	Methanol Storage Tank (7,000 gallons)	1961	Condenser 17-0611
35-0116	Methanol Storage Tank (7,000 gallons)	Prior to 1971	Condenser 17-0611

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit	Description	Date Constructed	Emission Control Equipment
35-0503	Methanol Column Surge Tank (735 gallons)	Prior to 1971	Condenser 17-0611
35-0631	Recovered Methanol Storage Tank (7,000 gallons)	Prior to 1971	Condenser 17-0611
35-0632	Recovered Methanol Storage Tank (7,000 gallons)	Prior to 1971	Condenser 17-0611
35-2113	Fresh Methanol Storage Tank (20,000 gallons)	Prior to 1984	Condenser 17-0611
35-0610	Recovered Solvents Storage Tank (9,600 Gallons)	1988	Condenser 17-0611
41-0137	Lime Storage Silo	1986	Baghouse 09-0136
41-0920	Lime Storage Silo	1986	Baghouse 09-0920
41-0142	Lime Weigh Bin	1981	Baghouse 09-0139
41-0924	Lime Weigh Bin	1985	Baghouse 09-0924
41-0146	Filter Aid Weigh Bin	Unknown	Baghouse 09-0147
41-0311	Filter Aid Weigh Bin	1985	Baghouse 09-0311
27-0403	Metallizer Reactor	Prior to 1971	Condenser 17-0411, Scrubber 05-0418
27-0205	Reactor	1961	Condenser, Scrubber, Flare 36-0219
27-0206	Reactor	1961	
21-0522	Air Stripper	1995	None
21-0523	Air Stripper	1995	None
Unit 275 Processes			
27-0201	PBSA Reactor	1965	Condenser 17-0214
27-0211	PBSA Reactor	1965	Condenser 17-0214
27-0216	Chlorinator Reactor	4/1973	Condenser 17-0218, Scrubber 33-0220
27-0501	Neutralizer Reactor	1965	Condenser 17-0502, Condenser 17-0512
27-0511	Neutralizer Reactor	1965	
27-0531	Reactor	1965	Condenser 17-0535, Condenser 17-0532
41-0171	Filter Aid Storage Silo	11/1964	Baghouse 09-0171
41-0172	Filter Aid Storage Silo	11/1964	Baghouse 09-0172
41-0173	Filter Aid Weigh Bin	11/1964	Baghouse 09-0173
41-0174	Filter Aid Weigh Bin	11/1964	Baghouse 09-0174
41-0184	Boric Acid Storage Silo	12/1985	Baghouse 09-0184
41-0187	Boric Acid Vacuum Receiver	12/1985	Filter S-6

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Unit	Description	Date Constructed	Emission Control Equipment
41-0176	Boric Acid Weigh Bin	12/1985	Baghouse 09-0176

5.0 OVERALL SOURCE CONDITIONS

5.1 Source Description

5.1.1 This permit is issued based on the source requiring a CAAPP permit as a major source of VOM and SO₂ emissions.

5.1.2 This permit is issued based on the source being a major source of HAPs.

5.2 Applicable Regulations

5.2.1 Specific emission units at this source are subject to particular regulations as set forth in Section 7 (Unit-Specific Conditions) of this permit.

5.2.2 In addition, emission units at this source are subject to the following regulations of general applicability:

- a. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.301 and 212.314.

Proper operation and maintenance, as required by this permit, assures compliance with this requirement (for example, operation and maintenance requirements in Condition 5.4.2).

- b. No person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 212.123(b) and 212.124.

5.2.3 Ozone Depleting Substances

The Permittee shall comply with the standards for recycling and emissions reduction of ozone depleting substances pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners in Subpart B of 40 CFR Part 82:

- a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.
- b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- c. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

5.2.4 Risk Management Plan

- a. This stationary source, as defined in 40 CFR Section 68.3, is subject to 40 CFR Part 68, the Accidental Release Prevention regulations [40 CFR 68.215(a)(1)].
- b. The owner or operator of a stationary source shall revise and update the RMP submitted, as specified in 40 CFR 68.190.

- 5.2.5
- a. Should this stationary source become subject to a regulation under 40 CFR Parts 60, 61, or 63, or 35 IAC after the date issued of this permit, then the owner or operator shall, in accordance with the applicable regulation(s), comply with the applicable requirements by the date(s) specified and shall certify compliance with the applicable requirements of such regulation(s) as part of the annual compliance certification, as required by 40 CFR Part 70 or 71.
 - b. No later than upon the submittal for renewal of this permit, the owner or operator shall submit, as part of an application, the necessary information to address either the non-applicability of, or demonstrate compliance with all applicable requirements of any potentially applicable regulation which was promulgated after the date issued of this permit.

5.2.6 Episode Action Plan

- a. If the source is required to have an episode action plan pursuant to 35 IAC 244.142, the Permittee shall maintain at the source and have on file with the Illinois EPA a written episode action plan (plan) for reducing the levels of emissions during yellow alerts, red alerts, and emergencies, consistent with safe operating procedures. The plan shall contain the information specified in 35 IAC 244.144.
- b. The Permittee shall immediately implement the appropriate steps described in this plan should an air pollution alert or emergency be declared.
- c. If a change occurs at the source which requires a revision of the plan (e.g., operational change, change in the source contact person), a copy of the revised plan shall be submitted to the Illinois EPA for review within 30 days of the change. Such plans shall be further revised if disapproved by the Illinois EPA.
- d. For sources required to have a plan pursuant to 35 IAC 244.142, a copy of the original plan and any subsequent revisions shall be sent to:
 - i. Illinois EPA, Compliance Section; and
 - ii. For sources located in Cook County and outside of the city of Chicago: Cook County Department of Environmental Control; or
 - iii. For sources located within the city of Chicago: Chicago Department of Environmental Control.

5.2.7 HAP Emissions

- a. This source is subject to 40 CFR 61, Subpart FF, National Emission Standards for Benzene Waste Operations, because this source is a chemical manufacturing plant with benzene-containing hazardous waste. The provisions of Subpart FF apply to the benzene-containing hazardous waste from this source, except for waste in the form of gases or vapors that is emitted from process fluids and waste that is contained in a segregated stormwater sewer system [40 CFR 61.340].

- b. This source is subject to 40 CFR 63, Subparts F and G, National Emission Standards for Organic Hazardous Air Pollutants, because this source operates a chemical manufacturing unit which manufactures alkylbenzene as a primary product. The provisions of Subpart G apply to all process vents, storage vessels, transfer racks, and wastewater streams within the affected process [40 CFR 63.110(a)].
- c. This source is subject to 40 CFR 63, Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks, because this source operates a chemical manufacturing unit which manufactures benzenesulfonic acid as a primary product. The provisions of Subpart H apply to all equipment (i.e., each pump, compressor, agitator, pressure relief device, sampling connection system, open-ended valve or line, valve, and connector, surge control vessels, bottoms receiver, instrumentation system, and control device or system) that is intended to operate organic HAP service 300 hours or more during the calendar year within a source subject to 40 CFR 63, Subpart F [40 CFR 63.160(a)].

5.2.8 CAM Plan

This stationary source has a pollutant-specific emissions unit that is subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources. The source must submit a CAM plan for each affected pollutant-specific emissions unit upon application for renewal of the initial CAAPP permit, or upon a significant modification to the CAAPP permit for the construction or modification of a large pollutant-specific emissions unit which has the potential post-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

5.3 Non-Applicability of Regulations of Concern

None

5.4 Source-Wide Operational and Production Limits and Work Practices

In addition to the source-wide requirements in the Standard Permit Conditions in Section 9, the Permittee shall fulfill the following source-wide operational and production limitations and/or work practice requirements:

5.4.1 HAP Emissions from Equipment Leaks

These conditions apply to all emission units in organic HAP service identified in 40 CFR 63.100(e) through (i) which are associated with the Alkylbenzene Process in Unit 258.

- a. The Permittee shall comply with the applicable design and equipment standards, and marking, inspection, monitoring, repair and testing requirements in 40 CFR 63 Subpart H for the following sources that are intended to operate in organic HAP service 300 hours or more during the calendar year, and which are not in vacuum service:
 - i. Pumps (40 CFR 63.163 and 63.176);
 - ii. Compressors (40 CFR 63.164);
 - iii. Pressure relief devices in gas/vapor service (40 CFR 63.165);
 - iv. Sampling connection systems (40 CFR 63.166);
 - v. Open-ended valves or lines (40 CFR 63.167);
 - vi. Valves in gas/vapor service and in light liquid service (40 CFR 63.168 and 63.175);
 - vii. Pumps, valves, connectors, and agitators in heavy liquid service; instrument systems; and pressure relief devices in liquid service (40 CFR 63.169);
 - viii. Surge control vessels and bottoms receivers (40 CFR 63.170);
 - ix. Closed-vent systems and control devices (40 CFR 63.172);
 - x. Agitators in gas/vapor service and in light liquid service (40 CFR 63.173); and

- xi. Connectors in gas/vapor service and in light liquid service (40 CFR 63.174).
- b. Delayed repair of leaks is allowed as provided in 40 CFR 63.171.
- c. The Permittee shall follow the procedures specified in 40 CFR 63.180 for inspections and compliance tests.

5.4.2 General Operation and Maintenance Requirements

The Permittee shall maintain and operate each emission unit or group of emission units at this source that is regulated by relevant standards or requirements pursuant to 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, in accordance with "Operation and Maintenance Requirements" in 40 CFR 63.6(e). The emission units at this source that are subject to these requirements include Group 1 units and tanks used for synthetic organic chemical manufacturing, as addressed in Section 7 of this permit.

5.4.3 HAP Emissions from Benzene-Containing Waste

- a. The owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in 40 CFR 61.342(a) shall be in compliance with the requirements of 40 CFR 61.342(c) through (h).
- b. The Permittee shall comply with the applicable design and equipment standards, inspection, and testing requirements, and emission limits in 40 CFR 61 Subpart FF for the following sources that include benzene-containing hazardous waste:
 - i. Tanks (40 CFR 61.343);
 - ii. Surface impoundments (40 CFR 61.344);
 - iii. Containers (40 CFR 61.345);
 - iv. Individual drain systems (40 CFR 61.346);
 - v. Oil-water separators (40 CFR 61.347);

- vi. Treatment processes (40 CFR 61.348);
 - vii. Closed-vent systems and control devices (40 CFR 61.349);
 - c. Delayed repair of leaks is allowed as provided in 40 CFR 61.350.
 - d. The Permittee shall follow the procedures specified in 40 CFR 61.355 for evaluation of waste streams, performance tests, compliance determinations and leak detection monitoring.
- 5.4.4 The following standards apply to flares used to meet applicable requirements in 40 CFR Part 60, 40 CFR Part 63, and 35 IAC 219, Subpart V.
- a. Flares shall be designed for and operated with no visible emissions as determined by the methods specified in Method 22 of 40 CFR 60, Appendix A, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours [40 CFR 60.18(c)(1) and 63.11(b)(4)].
 - b. Flares shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f) [40 CFR 60.18(c)(2) and 63.11(b)(5)].
 - c. The Permittee has the choice of adhering to either the heat content specifications in 40 CFR 60.18(c)(3)(ii) (also 40 CFR 63.11(b)(6)(ii)) and the maximum tip velocity specifications in 40 CFR 60.18(c)(4) (also 40 CFR 63.11(b)(7) or (b)(8)), or adhering to the requirements in 40 CFR 60.18(c)(3)(i) (also 40 CFR 63.11(b)(6)(i)) [40 CFR 60.18(c)(3) and 63.11(b)(6)].
 - d. Flares used to comply with 40 CFR 60 shall be steam-assisted, air-assisted, or nonassisted and shall be operated at all times when emissions may be vented to them [40 CFR 60.18(c)(6) and (e) and 63.11(b)(2) and (3)].

5.5 Source-Wide Emission Limitations

5.5.1 Permitted Emissions for Fees

The annual emissions from the source, not considering insignificant activities as addressed by Section 3.0 of this permit, shall not exceed the following limitations. The overall source emissions shall be determined by adding

emissions from all emission units. Compliance with these limits shall be determined on a calendar year basis. These limitations (Condition 5.5.1) are set for the purpose of establishing fees and are not federally enforceable.

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Volatible Organic Material (VOM)	833.09
Sulfur Dioxide (SO ₂)	359.04
Particulate Matter (PM)	12.82
Nitrogen Oxides (NO _x)	38.77
HAP, not included in VOM or PM	4.12
Total	1,247.84

5.5.2 Emissions of Hazardous Air Pollutants

- a. Source-wide emission limitations for HAPs as listed in Section 112(b) of the CAA are not set. This source is considered to be a major source of HAPs.
- b. For emission units subject to 40 CFR 63 Subpart G (e.g., emission units within the Alkylbenzene Process in Unit 258), the Permittee shall control emissions of organic HAPs to the level represented by the following equation:

$$E_A = 0.02 * EEPV_1 + EEPV_2 + 0.05 * EES_1 + EES_2 + 0.02 * EETR_1 + EETR_2 + EEWW_{1C} + EEWW_2$$

Where:

E_A = Emission rate, Mg/yr, allowed for the source.

$0.02EEPV_1$ = Sum of the residual emissions, Mg/yr, from all Group 1 process vents, as defined in 40 CFR 63.111.

$EEPV_2$ = Sum of the emissions, Mg/yr, from all Group 2 process vents as defined in 40 CFR 63.111.

$0.05EES_1$ = Sum of the residual emissions, Mg/yr, from all Group 1 storage vessels, as defined in 40 CFR 63.111.

EES_2 = Sum of the emissions, Mg/yr, from all Group 2 storage vessels, as defined in 40 CFR 63.111.

$0.02EETR_1$ = Sum of the residual emissions, Mg/yr, from all Group 1 transfer racks, as defined in 40 CFR 63.111.

$EETR_2$ = Sum of the emissions, Mg/yr, from all Group 2 transfer racks, as defined in 40 CFR 63.111.

$EEWW_{1c}$ = Sum of the residual emissions from all Group 1 wastewater streams, as defined in 40 CFR 63.111. This term is calculated for each Group 1 stream according to the equation for $EEWW_{1c}$ in 40 CFR 63.150(g) (5) (i).

$EEWW_2$ = Sum of emissions from all Group 2 wastewater streams, as defined in 40 CFR 63.111.

The emissions level represented by this equation is dependent on the collection of emission points in the source (including emission points in other sections of this permit). The level is not fixed and can change as the emissions from each emission point change or as the number of emission points in the source changes [40 CFR 63.112(a) and (b)].

The owner or operator may comply with the process vent provisions in 40 CFR 63.113 through 63.118, the storage vessel provisions in 40 CFR 63.119 through 63.123, the leak inspection provisions in 40 CFR 63.148, and the requirements of 40 CFR 63.151 and 63.152, as applicable. Because the owner or operator is using this compliance approach, the owner or operator is not required to calculate the annual emission rate specified in this condition [40 CFR 63.112(e)]. The emission points included in this equation are further described in Section 7 of this permit.

5.5.3 Other Source-Wide Emission Limitations

- a. The annual emissions from the source shall not exceed the following limitations:

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Emission Units	SO ₂ Emissions	Underlying Rules
Units 258 and 266	132.1 tons/year	35 IAC 202, Permit 82120030
Flare 36-0011 (Units 266, 280, and 290)	100 lb/hour	40 CFR 52.21, Permit 94110112

The limits on SO₂ emissions are limitations established in Permits 82120030 and 94110112. The limit from Permit 94110112 ensures that the affected emission units are not subject to the control requirements of 40 CFR 52.21 [T1].

The limit from Permit 82120030 was revised from 274.7 tons per year to reflect more stringent limits established in other permits (see Conditions 7.3.6 and 7.8.6). This emission limit is in lieu of the requirements of 35 IAC 214.301. Permit 82120030 was an Alternative Control Strategy (ACS), originally issued on August 10, 1983, to provide that in lieu of controlling SO₂ emissions from the ABSA Process (Unit 258) to comply with 35 IAC 214.301, SO₂ emissions from the ZDDP process (Unit 266) would be reduced by routing the off gases through the scrubber on the SIB process (Unit 280). ACS Permits are governed by regulations at 35 IAC Part 202. See Attachment 4 [T1R].

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

- b. The annual emissions from Flare 36-0011 shall not exceed the following limitations:

Pollutant	Emissions		Underlying Rules
	(Lb/Hour)	(Tons/Year)	
CO	7.21	31.60	40 CFR 52.21
NO _x	1.33	5.82	40 CFR 52.21
VOM	2.73	11.96	35 IAC Part 202

These limits are based on the maximum heat input to the flare from Units 266, 267, 280 and 290 (19.5 mmBtu/hr), and standard AP-42 emission factors for industrial flares.

The limits were established in Permit 98100080, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD) and 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 and 35 IAC Part 203 [T1].

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

- c. There may also be source-wide emission limitations imposed as a result of future actions as a part of this source's compliance plan (see Conditions 5.9.3 and 7.13.13).

5.6 General Recordkeeping Requirements

5.6.1 Emission Records

The Permittee shall maintain records of the following items for the source to demonstrate compliance with Condition 5.5.1, pursuant to Section 39.5(7)(b) of the Act:

Total annual emissions on a calendar year basis for the emission units covered by Section 7 (Unit Specific Conditions) of this permit.

5.6.2 Records for VOM and HAP Emissions

The Permittee shall maintain records of the following items for the source to quantify annual VOM and HAP emissions, so as to demonstrate compliance with the annual emission limits in Condition 5.5 or requirements in Condition 5.4:

- a. Aggregate monthly VOM emissions from emission units included in Section 7 of this permit; and
- b. Aggregate monthly HAP emissions from emission units included in Sections 3 and 7 of this permit, calculated as a fraction of VOM emissions according to vapor weight percent. HAP emissions from

insignificant emission units listed in Section 3 are only required if the emission unit is subject to a National Emissions Standard for Hazardous Air Pollutants (NESHAP) or maximum achievable control technology (MACT). For purposes of this condition, emission units that are not required to control or limit emissions but are required to monitor, keep records, or undertake other specific activities are considered subject to such regulation or requirement.

- c. For HAP emissions from equipment leaks, the Permittee shall maintain records as required by 40 CFR 63 Subpart H, including, but not limited to, the following requirements in 40 CFR 63.181:
 - i. Records on the detection, identity, and repair of leaks;
 - ii. Records on the operation of each closed-vent system and control device; and
 - iii. Records identifying all sources subject to 40 CFR 63, Subpart H.

- d. For HAP emissions from benzene waste operations, the Permittee shall maintain records as required by 40 CFR 61 Subpart FF, including, but not limited to, the following requirements in 40 CFR 61.356:
 - i. Records indicating whether or not waste streams are controlled;
 - ii. Records of engineering design documentation with any engineering calculations, performance test data, and equipment certifications;
 - iii. Records of the operation of each control device;
 - iv. Records of the operation of each waste processing unit; and
 - v. Records of the detection, identity and repair of leaks.

- e. The Permittee shall maintain a current list of all emission units to which it is applying the 5.0 ton/year exclusions of 35 IAC 219.960(c) and

219.980(c) (see Sections 7.3, 7.24, and 7.26), that includes:

- i. Name and identification of unit;
- ii. Annual volatile organic material emissions, ton/yr; and
- iii. Calculations and other support for the annual emissions.

5.6.3 Records for Operating Scenarios

N/A

5.6.4 Retention and Availability of Records

- a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.
- b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a source inspection.

5.7 General Reporting Requirements

5.7.1 General Source-Wide Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the source with the permit requirements as follows, pursuant to Section 39.5(7)(f)(iii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

5.7.2 Annual Emissions Report

The annual emissions report required pursuant to Condition 9.7 shall contain emissions information for the previous calendar year.

5.7.3 Annual Reporting of HAP Emissions

The Permittee shall submit an annual report to the Illinois EPA, Compliance Section, on HAP emissions from the source, including the information required by Condition 5.6.2(b). This may be included in the annual emissions report required pursuant to Condition 9.7.

5.7.4 Other Source Wide Reporting Requirements

- a. For HAP emissions from equipment leaks subject to the requirements of 40 CFR 63, Subpart H, the Permittee shall submit Periodic Reports as described in the reporting requirements of 40 CFR 63.182, including, but not limited to, semi-annual reports of monthly data on leaks and repairs.
- b. If the Permittee chooses to comply with alternative standards for batch processes in 40 CFR 63.178, the Illinois EPA shall be notified in writing at least 90 days before implementing such provisions.
- c. For HAP emissions from benzene waste operations, reports shall be submitted as required by 40 CFR 61.357, including, but not limited to
 - i. Annual reports on benzene waste streams and benzene emissions, including a table identifying each waste stream chosen for exemption and the total annual benzene quantity in these exempted streams; and
 - ii. Quarterly reports on equipment inspections and operation of treatment processes, wastewater treatment systems, and control devices.
- d. If the Permittee chooses to comply with alternative standards for tanks and oil-water separators, in 40 CFR 61.351 and 61.652, respectively, the Illinois EPA shall be notified in writing at least 30 days before implementing such provision.

5.8 General Operational Flexibility/Anticipated Operating Scenarios

- 5.8.1 The Permittee is authorized to make the following physical or operational change with respect to the affected processes without notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of any operational, control, or emission limit.
- b. The facility may replace the contents of any storage tank classified as an insignificant activity pursuant to 35 IAC 201.210(a)(11) with any other material that meets the definition of "lubricating oil."
- c. Batch cycle times are not fixed and may vary according to production scheduling so long as short term and annual production and emission limits are not exceeded.

5.9 General Compliance Procedures

5.9.1 General Procedures for Calculating Emissions

Compliance with the source-wide emission limits specified in Condition 5.5 shall be based on the recordkeeping and reporting requirements of Conditions 5.6 and 5.7, and compliance procedures in Section 7 (Unit Specific Conditions) of this permit.

- a. For the purpose of estimating VOM emissions from the organic chemical manufacturing processes, the following methods, in addition to AP-42 emission factors, are acceptable:
 - i. For the purpose of estimating VOM emissions from the storage tanks, the current version of the USEPA's TANKS program is acceptable.
 - ii. For the purpose of estimating fugitive and non-fugitive VOM emissions from chemical manufacturing processes at the source, engineering estimates based on stack tests, process simulations, or mass balance is acceptable.
 - iii. For the purpose of estimating fugitive VOM from leaking components at the facility, the average emissions factor approach found in USEPA's document "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-93-026, June 1993), is acceptable.

- b. For the purpose of estimating HAP emissions from equipment at the source, the vapor weight percent of each HAP for each organic liquid times the VOM emissions contributed by that organic liquid is acceptable.
 - c. For the purpose of estimating emissions from fuel combustion, the emission factors in the current version of AP-42, Section 1.4, are acceptable.
- 5.9.2 Compliance with the hazardous air pollutant regulations in Condition 5.2.7 shall be determined by the recordkeeping and reporting requirements in Conditions 5.6.2, 5.6.4, and 5.7.4.
- 5.9.3 Compliance Plan/Schedule of Compliance

To achieve compliance with applicable limitations of this permit, the Permittee shall follow a schedule of compliance consistent with the compliance plan required by Section 39.5(5)(d) of the Act. Such compliance plan shall describe how each emission unit will comply with all applicable requirements. The schedule of compliance as required by Section 39.5(7)(p)(iii) of the Act is in Condition 7.13.13 of this permit.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

6.0 NOT APPLICABLE TO THIS PERMIT

7.0 UNIT SPECIFIC CONDITIONS

7.1 Unit 258: Batch Reactor Trains
Control: Condensers, Scrubber, Flare

7.1.1 Description

In the Unit 258 AB Process, alkylbenzene, which is an intermediate for the production of alkylbenzene sulfonic acid, is manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, and a flare.

7.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0105	AB Reactor	Condensers, Scrubber 33-0549, Flare 36-0219
27-0106	AB Reactor	
27-0550	AB Reactor	
35-0580	Benzene Storage Tank T-580 (35,000 gallons)	Scrubber 33-0549, Flare 36-0219
35-0589	Benzene/Water Separator Feed Tank T-589	
35-0588	Benzene/Water Separator Tank T-588	
35-0141	Recovered Benzene Feed Tank	
35-0608/0201	Wastewater Hold Tank	Condenser 17-0202, Scrubber 33-0549, Flare 36-0219
35-0501	Steam Sparge Tank	

7.1.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 258 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of synthetic organic chemicals, as listed in Condition 7.1.2. The "affected Unit 258 benzene storage tank" for the purpose of these unit-specific conditions, is the benzene storage tank listed in Condition 7.1.2.

- b. The affected Unit 258 reactor systems shall comply with 35 IAC 219, Subpart G: Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.1.3(b) (ii) below) and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
 - ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.1.3(b) (i) above) are allowable if such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].
- c. The affected Unit 258 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d) (1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d) (2)].
- d. Except as provided in Condition 5.5.3, the affected Unit 258 reactor systems are subject to 35 IAC 214

Subpart K, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2,000 ppm [35 IAC 214.301].

- e. The affected Unit 258 reactor systems are subject to 40 CFR 63 Subpart F, National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry. The Illinois EPA is administering the NESHAP in Illinois under a delegation agreement.
- f. The affected Unit 258 reactor systems are subject to 40 CFR 63 Subpart G, National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Waste Water. The Illinois EPA is administering the NESHAP in Illinois under a delegation agreement.
- g. The affected Unit 258 reactor systems are subject to 40 CFR 63 Subpart H, National Emission Standard for Organic Hazardous Air Pollutants for Equipment Leaks (see Conditions 5.4.1, 5.6.2, and 5.7.4). The Illinois EPA is administering the NESHAP in Illinois under a delegation agreement.
- h. The affected Unit 258 reactor systems are subject to 40 CFR 61 Subpart FF, National Emission Standard for Benzene Waste Operations (see Conditions 5.4.3, 5.6.2, and 5.7.4).
- i. The affected Unit 258 benzene storage tank is subject to the requirements of 35 IAC 219.122(b) because the storage tank has a storage capacity greater than 946 liters (250 gallons).
- j. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare, the Permittee is authorized to continue operation of the affected Unit 258 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 258 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.1.9(a) and 7.1.10(a).
- iv. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.1.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 258 reactor systems not being subject to the Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations, 40 CFR Part 60, Subpart NNN. A Group 1 process vent that is also subject to the provisions of 40 CFR 60 Subpart NNN is required to comply only with the provisions of 40 CFR 63 Subpart G [40 CFR 63.110(d)(4)].
- b. This permit is issued based on the affected Unit 258 reactor systems not being subject to the Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes, 40 CFR Part 60, Subpart RRR. A Group 1 process vent that is also subject to the provisions of 40 CFR 60 Subpart RRR is required to comply only with the provisions of 40 CFR 63 Subpart G [40 CFR 63.110(d)(7)].
- c. This permit is issued based on the affected Unit 258 reactor systems units not being subject to the Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Industry, 40 CFR Part 60, Subpart VV. Equipment to which 40 CFR 63 Subpart H applies that are also subject to the provisions of 40 CFR Part 60 will be required to comply only with the provisions of 40 CFR 63 Subpart H [40 CFR 63.160(b)(1)].

- d. This permit is issued based on the affected Unit 258 reactor systems not being subject to the National Emission Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene, 40 CFR Part 61, Subparts J and V. Equipment to which 40 CFR 63 Subpart H applies that are also subject to the provisions of 40 CFR Part 61 will be required to comply only with the provisions of 40 CFR 63 Subpart H [40 CFR 63.160(b)(2)].
- e. This permit is issued based on the affected Unit 258 benzene storage tank not being subject to the Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984, 40 CFR 60, Subpart Kb. A Group 1 or Group 2 storage vessel that is also subject to the provisions of 40 CFR 60 Subpart Kb is required to comply only with the provisions of 40 CFR 63 Subpart G [40 CFR 63.110(b)(1)].
- f. This permit is issued based on the storage tanks for the affected Unit 258 reactor systems not being subject to 40 CFR 61, Subpart Y. A Group 1 or Group 2 storage vessel that is also subject to the provisions of 40 CFR 61 Subpart Y is required to comply only with the provisions of 40 CFR 63 Subpart G [40 CFR 63.110(b)(2)].
- g. This permit is issued based on the affected Unit 258 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- h. This permit is issued based on the affected Unit 258 reactor systems units not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units

which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].

- i. The affected Unit 258 benzene storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because the storage tank has a capacity of less than 40,000 gallons.
- j. This permit is issued based on the affected Unit 258 reactor systems not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 258 reactor systems are subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b) (1) (i).

7.1.5 Control Requirements

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The owner or operator shall demonstrate compliance with the emission standard in Condition 5.5.2 by complying with the process vent provisions in 40 CFR 63.113 through 63.118, the storage vessel provisions in 40 CFR 63.119 through 63.123, the leak inspection provisions in 40 CFR 63.148, and the requirements of 40 CFR 63.151 and 63.152, as applicable [40 CFR 63.112(e)]. The process vent provisions include a requirement to reduce emissions of total organic

hazardous air pollutants by 98 weight-percent or to a concentration of 20 ppmv, whichever is less stringent.

- d. The Permittee of a Group 1 process vent or Group 1 storage vessel as defined in 40 CFR 63 Subpart G shall reduce emissions of organic HAP using a flare [40 CFR 63.113(a)(1) and 63.119(e)].
 - i. The flare shall comply with the requirements in Condition 7.1.5(e) [40 CFR 63.113(a)(1)(i) and 63.119(e)(1)].
 - ii. Halogenated vent streams, as defined in 40 CFR 63.111, shall not be vented to a flare [40 CFR 63.113(a)(1)(ii)].
 - iii. Except as provided in Condition 7.1.5(d)(v), the flare shall be designed and operated to reduce inlet emissions of total organic HAP by 95 percent or greater [40 CFR 63.113(e)(1)].
 - iv. Periods of planned routine maintenance of the flare, during which the flare does not meet the specifications of Condition 7.1.5(d)(iii), shall not exceed 240 hours per year [40 CFR 63.113(e)(3)].
 - v. The specifications and requirements in Condition 7.1.5(d)(iii) do not apply during periods of planned routine maintenance or during a control system malfunction [40 CFR 63.113(e)(4) and (5)].
- e.
 - i. Flares shall be steam-assisted, air-assisted, or non-assisted [40 CFR 63.11(b)(2)].
 - ii. Flares shall be operated at all times when emissions may be vented to them [40 CFR 63.11(b)(3)].
 - iii. Flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Test Method 22 in 40 CFR Appendix A shall be used to determine the compliance of flares with the visible emission provisions in 40 CFR 63. The observation period is 2 hours and shall be used according to Method 22 [40 CFR 63.11(b)(4)].

iv. The Permittee has the choice of adhering to the heat content specifications in Condition 7.1.5(e) (vi), and the maximum tip velocity specifications in Condition 7.1.5(e) (vii) and (viii), or adhering to the requirements in Condition 7.1.5(e) (v) [40 CFR 63.11(b) (6)].

v. A. Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume) or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity V_{max} , as determined by the following equation:

$$V_{max} = (X_{H2} - K_1) * K_2$$

Where:

V_{max} = Maximum permitted velocity, m/sec.

K_1 = Constant, 6.0 volume-percent hydrogen.

K_2 = Constant, 3.9(m/sec)/volume-percent hydrogen.

X_{H2} = The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946-77.

[40 CFR 63.11(b) (6) (i) (A)].

B. The actual exit velocity of a flare shall be determined by the method specified in Condition 7.1.5(e) (vii) (A) [40 CFR 63.11(b) (6) (i) (B)].

vi. Flares shall be used only with the net heating value of the gas being combusted at 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted at 7.45 MJ/scm (200 Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm;
 where the net enthalpy per mole of offgas
 is based on combustion at 25 °C and 760
 mmHg, but the standard temperature for
 determining the volume corresponding to
 one mole is 20 °C.

K = Constant =

$$1.740 * 10^{-7} \left(\frac{1}{\text{ppmv}} \right) \left(\frac{\text{g - mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for (g-
 mole/scm) is 20 °C.

C_i = Concentration of sample component i in
 ppmv on a wet basis, as measured for
 organics by Test Method 18 and measured
 for hydrogen and carbon monoxide by
 American Society for Testing and
 Materials (ASTM) D1946-77 (incorporated
 by reference as specified in 40 CFR
 63.14).

H_i = Net heat of combustion of sample
 component i, kcal/g-mole at 25 °C and 760
 mmHg. The heats of combustion may be
 determined using ASTM D2382-76
 (incorporated by reference as specified
 in 40 CFR 63.14) if published values are
 not available or cannot be calculated.

n = Number of sample components

[40 CFR 63.11(b) (6) (ii)].

- vii. A. Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity less than 18.3 m/sec (60 ft/sec), except as provided in Condition 7.1.5(e) (vii) (B) and (C). The actual exit velocity of a flare shall be determined by dividing by the volumetric

flow rate of gas being combusted (in units of emission standard temperature and pressure), as determined by Test Methods 2, 2A, 2C, or 2D in 40 CFR 60 Appendix A, as appropriate, by the unobstructed (free) cross-sectional area of the flare tip [40 CFR 63.11(b) (7) (i)].

- B. Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the method specified in Condition 7.1.5(e) (vii) (A), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec), are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf) [40 CFR 63.11(b) (7) (ii)].

- C. Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the method specified in Condition 7.1.5(e) (vii) (A), less than the velocity V_{max} , as determined by the method specified in Condition 7.1.5(e) (vii) (C), but less than 122 m/sec (400 ft/sec) are allowed. The maximum permitted velocity, V_{max} , for flares complying with Condition 7.1.5(e) (vii) (C) shall be determined by the following equation:

$$\text{Log}_{10} (V_{max}) = (H_T + 28.8)/31.7$$

Where:

- V_{max} = Maximum permitted velocity, m/sec.
- 28.8 = Constant.
- 31.7 = Constant.
- H_T = The net heating value as determined in Condition 7.1.5(e) (vi)

[40 CFR 63.11(b) (7) (iii)].

- viii. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max} . The maximum permitted velocity, V_{max} , for air-assisted flares shall be determined by the following equation:

$$V_{max} = 8.71 + 0.708(H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec.

8.71 = Constant.

0.708 = Constant.

H_T = The net heating value as determined in Condition 7.1.5(e) (vi)

[40 CFR 63.11(b) (8)].

- f. For each Group 1 storage vessel (as defined in table 5 of 40 CFR 63 Subpart G) storing a liquid for which the maximum true vapor pressure of the total organic hazardous air pollutants in the liquid is less than 76.6 kilopascals, the owner or operator shall reduce hazardous air pollutants emissions to the atmosphere by operating and maintaining a closed vent system and control device in accordance with the requirements in Condition 7.1.5(c) [40 CFR 63.119(a) (1)].
- g. The affected Unit 258 benzene storage tank shall be equipped with a permanent submerged loading pipe unless such tank is fitted with a recovery system as described in 35 IAC 219.121(b) (2). If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3 °K (70 °F) [35 IAC 219.122(b) and (c)]. For the purpose of this condition, Flare 36-0219 operating in compliance with the requirements above meets the specifications of a recovery system as described in 35 IAC 219.121(b) (2).
- h. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working

condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.

7.1.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 258 reactor systems are subject to the following:

- a. Emissions from the flare attributable to the affected Unit 258 reactor systems shall not exceed the following limits:

VOM Emissions	
<u>(Ton/Month)</u>	<u>(Ton/Year)</u>
0.25	1.8

These limits are based on the maximum operation and maximum emission estimates using material balance equations and 98% VOM destruction efficiency for the Flare 36-0219.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations contain revisions to previously issued Permit 91070103. The source has requested that the Illinois EPA establish conditions in this permit that allow various refinements from the conditions of this aforementioned permit, consistent with the information provided in the CAAPP application. The source has requested these revisions and has addressed the applicability and compliance of Title I of the CAA, specifically 35 IAC Part 203, Major Stationary Sources Construction and Modification. These limits continue to ensure that the construction and/or modification addressed in this permit does not constitute a new major source or major modification pursuant to these rules. These limits are the primary enforcement mechanism for the equipment and activities permitted in this permit and the information in the CAAPP application contains the most current and accurate information for the source. Specifically, the short term limit was changed from an hourly basis to a monthly basis [T1R].

7.1.7 Testing Requirements

- a. Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503. The flare shall comply with the requirements of 40 CFR 60.18, as required by Condition 7.1.5(b) [35 IAC 219.503(b) and (c)].
- b. When a flare is used to comply with 40 CFR 63.113(a)(1), the Permittee shall comply with the flare provisions in Condition 7.1.5(e) and 7.1.8(b).
 - i. The compliance determination shall be conducted using Method 22 in Appendix A of 40 CFR 60, to determine visible emissions [40 CFR 63.116(a)(1)].
 - ii. The Permittee is not required to conduct a performance test to determine percent emission reduction or outlet organic HAP or TOC concentration when a flare is used [40 CFR 63.116(a)(2)].
- c. Where the provisions of 40 CFR 63, Subpart G require a performance test, waiver of that requirement shall be addressed only as provided in 40 CFR 63.103(b)(5) [40 CFR 63.112(h)].

7.1.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 or 40 CFR 63.113(a), shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b) and 40 CFR 63.114(a)(2)].
- b.
 - i. The Permittee using flares to comply with Condition 7.1.5(c) shall monitor these control devices to assure that they are operated and maintained in conformance with their designs [40 CFR 63.11(b)(1)].
 - ii. Flares shall be operated with a pilot flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to

detect the presence of a flame [40 CFR
63.11(b)(5)].

- c. The owner or operator of a process vent shall comply with paragraph (i) or (ii) below for any bypass line between the origin of the gas stream and the point where the gas stream reaches the process vent, as described in 40 CFR 63.107, that could divert the gas stream directly to the atmosphere. Equipment such as low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and pressure relief valves needed for safety purposes are not subject to this paragraph:
 - i. Properly install, maintain, and operate a flow indicator that takes a reading at least once every 15 minutes. Records shall be generated as specified in 40 CFR 63.118(a)(3). The flow indicator shall be installed at the entrance to any bypass line that could divert the gas stream to the atmosphere [40 CFR 63.114(d)(1)]; or
 - ii. Secure the bypass line valve in the non-diverting position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the non-diverting position and the gas stream is not diverted through the bypass line [40 CFR 63.114(d)(2)].

7.1.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected Unit 258 reactor system to demonstrate compliance with Conditions 5.5.1 and 7.1.5 through 7.1.8, pursuant to Section 39.5(7)(b) of the Act:

- a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 258 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
 - ii. A detailed explanation of the malfunction or breakdown;
 - iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 258 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
 - iv. The measures used to reduce the quantity of emissions and the duration of the event;
 - v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
 - vi. The amount of release above typical emissions during malfunction/breakdown.
- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.1.8 (see 35 IAC 219.504).
- i. Continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c)(2)].
- c. Records addressing use of good operating practices for the emissions control devices:
- i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect,

effect on emissions, date identified, date repaired, and nature of repair.

- d. The Permittee subject to the control provision for Group 1 process vents in 40 CFR 63.113(a) shall:
 - i. Keep an up-to-date, readily accessible record of the data specified in Condition 7.1.9(d) (iii) [40 CFR 63.117(a) (1)].
 - ii. If any subsequent performance tests are conducted after the Notification of Compliance Status has been submitted, report the data in Conditions 7.1.9(d) (iii) in the next Periodic Report as specified in 40 CFR 63.152(c) [40 CFR 63.117(a) (3)].
 - iii. Record and report the following when using a flare to comply with 40 CFR 63.113(a) (1):
 - A. Flare design (i.e., steam-assisted, air-assisted, or non-assisted) [40 CFR 63.117(a) (5) (i)];
 - B. All visible emission reading, heat content determination, flow rate measurements, and exit velocity determinations made during the compliance determination required by Condition 7.1.7(b) [40 CFR 63.117(a) (5) (ii)]; and
 - C. All periods during the compliance determination when the pilot flame is absent [40 CFR 63.117(a) (5) (iii)].
- e. The Permittee using a flare to comply with 40 CFR 63.113(a) (1) shall keep the following records up-to-date and readily accessible:
 - i. The hourly records and records of pilot flame outages specified in table 3 of 40 CFR 63 Subpart G shall be maintained [40 CFR 63.118(a) (1)].
 - ii. Records of the times and duration of all periods during which all pilot flames are absent shall be kept [40 CFR 63.118(a) (2) and (a) (2) (v)].

- iii. Hourly records of whether the flow indicator specified under Condition 7.1.8(c) (i) was operating and whether flow was detected at any time under the hour, as well as records of the times and durations of all periods when the vent stream is diverted from the control device or the monitor is not operating [40 CFR 63.118(a) (3)].
 - iv. Where a seal mechanism is used to comply with Condition 7.1.8(c) (ii), hourly records of flow are not required. In such cases, the owner or operator shall record that the monthly visual inspection of the seals or closure mechanism has been done, and shall record the duration of all periods when the seal mechanism is broken, the bypass line valve position has changed, or the key for a lock-and-key type lock has been checked out, and records of any car-seal that has broken [40 CFR 63.118(a) (4)].
- f. Records of operation and emissions of the affected Unit 258 reactor systems:
- i. Quantity of batches produced (batches/month and batches/year);
 - ii. The identification of each organic liquid and throughput of each organic liquid through the storage tank (gallons/month and gallons/year);
 - iii. All the detailed data necessary to determine VOM and SO₂ emissions using the procedures specified in Section 7.1.12;
 - iv. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - v. VOM emissions in units specified by the emission limits in Condition 7.1.6 (ton/month and ton/year); and
 - vi. The aggregate annual VOM, PM, NO_x, and SO₂ emissions from the affected unit 258 reactor systems, with supporting calculations.

7.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 258 reactor systems with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 258 reactor systems subject to Condition 7.1.3(i) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected Unit 258 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the affected Unit 258 reactor systems were taken out of service.
- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the

malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the affected Unit 258 reactor systems will be taken out of service.

- b. The Permittee shall comply with the applicable initial notification requirements specified in 40 CFR 63.151 and the applicable reporting requirements in 40 CFR 63.152.
- c. The Permittee who elects to comply with the requirements of 40 CFR 63.113 shall submit to the Illinois EPA Periodic Reports of the following recorded information according to the schedule in 40 CFR 63.152.
 - i. For Group 1 points, reports of the duration of periods when monitoring data is not collected for each excursion caused by insufficient monitoring data as defined in 40 CFR 63.152(c)(2)(ii)(A) [40 CFR 63.118(f)(2)].
 - ii. Reports of times and durations of all periods recorded under Condition 7.1.9(c)(ii) in which all pilot flames of a flare were absent [40 CFR 63.118(f)(5)].
- d. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 258 benzene storage tank without usage of a permanent submerged loading pipe or vapor recovery system. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
- e. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.1.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.1.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to the affected Unit 258 reactor systems without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Notwithstanding Condition 7.1.5(c), the owner or operator may elect to control some of the emission points within the source to different levels than specified under 40 CFR 63.113 through 63.148 by using an emissions averaging compliance approach as long as the overall emissions for the source do not exceed the emission level specified in Condition 5.5.2. The owner or operator using emissions averaging must meet the requirements below:
 - i. Calculate emission debits and credits for those emission points involved in the emissions average as specified in 40 CFR 63.150 [40 CFR 63.112(f)(1)]; and
 - ii. Comply with the requirements of 40 CFR 63.151 and 63.152, as applicable [40 CFR 63.112(f)(2)].

7.1.12 Compliance Procedures

- a. The Permittee of the affected Unit 258 reactor systems shall demonstrate compliance with the emission standard in Condition 5.5.2(b) by following the procedures specified in Condition 7.1.5(c) for all emission points [40 CFR 63.112(c)].
- b. Compliance with the control requirements of Condition 7.1.5 and the testing requirements of Condition 7.1.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.1.8, 7.1.9, and 7.1.10.
- c. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.1.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.1.8.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

- d. Emissions from the affected Unit 258 benzene storage tank shall be determined by the recordkeeping requirements in Condition 7.1.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.2 Unit 258: Drum Washing Station
 Control: Venturi Scrubber

7.2.1 Description

Empty aluminum chloride drums are washed with water. Hydrogen chloride vapors are controlled by a Venturi scrubber.

7.2.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Unit 258 Washing	Drum Washing Station	Venturi Scrubber 10-AlCl ₃

7.2.3 Applicability Provisions and Applicable Regulations

- a. The "affected drum washing station" for the purpose of these unit-specific conditions, is an emission unit used to wash drums with water.
- b. The affected drum washing station is subject to the general emission limits identified in Condition 5.2.2. There are no other regulations applicable to this emission unit.

7.2.4 Non-Applicability of Regulations of Concern

This permit is issued based on the affected drum washing station not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected drum washing station does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.2.5 Control Requirements

None

7.2.6 Emission Limitations

There are no specific emission limitations for this unit, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.2.7 Operating Requirements

None

7.2.8 Monitoring Requirements

None

7.2.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected drum washing station to demonstrate compliance with Conditions 5.5.1, pursuant to Section 39.5(7)(b) of the Act:

- a. Amount of aluminum chloride used and/or purchased (lb/year); and
- b. Hydrogen chloride emissions (lb/year).

7.2.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the affected drum washing station with the permit requirements, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

7.2.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.2.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.2.9. These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation.

7.3 Unit 258: Sulfonator
 Control: Scrubbers, Electrostatic Precipitator

7.3.1 Description

In the Unit 258 ABSA Process, the alkylbenzene manufactured in the AB reactors is further processed in a sulfonator to produce alkylbenzene sulfonic acid, a lubricating oil intermediate, in a continuous process. VOM and SO₂ emissions from the sulfonator and associated tanks are controlled by various scrubbers.

7.3.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
15-3011	Sulfur Burner	Acid Scrubber
27-3012	Converter	33-7011 (Startup Only), ESP 21-8021, Caustic Scrubber 33-8031
43-3021	Oleum Separator	
27-4011	Sulfonator	Feed Scrubber 33-9011, ESP 21-8021, Caustic Scrubber 33-8031

7.3.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 258 sulfonation process" for the purpose of these unit-specific conditions, are emission units used in the production of alkylbenzene sulfonic acid, as listed in Condition 7.3.2.
- b. The affected Unit 258 sulfonation process is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. Except as provided in Condition 5.5.3, the affected Unit 258 sulfonation process is subject to 35 IAC 214 Subpart K, which provides that:

- i. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2,000 ppm [35 IAC 214.301]; and
 - ii. No person using sulfuric acid shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all similar emission sources to exceed 4.5 grams in any one hour period for sulfuric acid usage less than 1180 Mg/yr (100% acid basis) (0.1 lb/hr up to 1300 ton/year) or 250 grams per metric ton of acid used for sulfuric acid usage greater than or equal to 1180 Mg/yr (100% acid basis) (0.50 lb/ton over 1300 ton/year) [35 IAC 214.303].
- d. Startup Provisions

The Permittee is authorized to operate the sulfur burner (15-3011) in violation of the applicable limit of 35 IAC 214.301 or 214.381 during cold startup pursuant to 35 IAC 201.262, as the Permittee has affirmatively demonstrated that all reasonable efforts have been made to minimize startup emissions, duration of individual starts, and frequency of startups. This authorization is subject to the following:

- i. This authorization only extends for a period of up to 12 hours following initial firing of fuel during each startup event.
- ii. The Permittee shall take the following measures to minimize startup emissions, the duration of startups, and minimize the frequency of startups:
 - A. Implementation of established startup procedures, including burning of sulfur residue by keeping the sulfur burner hot prior to shutdown (unless an emergency, malfunction, or breakdown occurs); and
 - B. Operating the preheater at a rate to increase sulfur burner temperature by 40-50°F per hour.

- iii. The Permittee shall fulfill the applicable recordkeeping requirements of Condition 7.3.9(a).
- iv. For the purpose of this condition, a cold startup includes those occasions when the sulfur burner is heated from ambient temperature to operating temperature after the burner is turned off, typically due to equipment malfunction or process turnaround.

7.3.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 258 sulfonation process not being subject to 35 IAC 219 Subpart V: Batch Operations and Air Oxidation Processes, because these emission units do not perform batch operations or air oxidation processes.
- b. This permit is issued based on the affected Unit 258 sulfonation process not being subject to 35 IAC 219 Subpart RR: Miscellaneous Organic Chemical Manufacturing Processes, because no limits under 35 IAC 219 Subpart RR shall apply to emission units with emissions of VOM to the atmosphere less than or equal to 0.91 Mg (1.0 ton) per calendar year if the total emissions from such emission units not complying with 35 IAC 219.966 does not exceed 4.5 Mg (5.0 tons) per calendar year [35 IAC 219.960(c)].
- c. This permit is issued based on the affected Unit 258 sulfonation process not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 258 sulfonation process does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.3.5 Control Requirements And Operational And Production Limits

- a. The caustic scrubber (33-8031) shall be operated and maintained to provide a minimum of 98% removal of SO₂, except that during malfunction or breakdown of the scrubber, the sulfur burn rate shall be maintained at less than 7.5 pounds per minute. These limits were established in Permit 96050095. A sulfur burn rate of 7.5 pounds per minute ensures that uncontrolled SO₂

emissions remain below the regulatory standard of 2,000 ppm (see Condition 7.3.3(c)(i)).

- b. The scrubbant solution for the caustic scrubber (33-8031) shall be recharged when the pH of the solution drops below 9.5, as measured by the monitoring system required by Condition 7.3.8.

7.3.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 258 sulfonation process is subject to the following:

- a. Emissions from the affected Unit 258 sulfonation process shall not exceed the following limits:

SO ₂ Emissions	
<u>(Ton/4-Week Period)</u>	<u>(Ton/Year)</u>
8.0	24.4

These limits are based on average SO₂ concentrations of 50 ppm during normal operating conditions, and 1900 ppm during scrubber malfunction or breakdown.

Compliance with the short term limit is required during startup. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 96050095, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1].

- b. Emissions of sulfuric acid mist, including sulfur trioxide, from the affected Unit 258 sulfonation process unit shall not exceed 2.7 tons/year. This limit was established in Permit 82120030 [T1].
- c. VOM emissions from the affected Unit 258 sulfonation process shall not exceed 1.0 ton per year. The above

limitations are being established in this permit. These limits ensure that the affected Unit 258 sulfonation process is not subject to the control requirements of 35 IAC Part 219, Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes [T1N].

7.3.7 Testing Requirements

Upon request by the Illinois EPA, any measurements of sulfur dioxide or sulfuric acid mist emissions from the affected Unit 258 sulfonation process unit shall be measured by the Permittee. These initial measurements shall be conducted, documented and reported in accordance with USEPA methods in 40 CFR Part 60, Appendix A, or as otherwise approved by the Illinois EPA.

7.3.8 Monitoring Requirements

- a. The Permittee shall operate a continuous monitoring system for scrubbant pH of the caustic scrubber (33-8031). The Permittee may change to a manual measurement during malfunction of the monitor.
- b. If the scrubbant flow rate of the caustic scrubber (33-8031) is not continuously monitored, the flow rate shall be entered on a log sheet at least once per 8 hour shift. This requirement was established in Permit 96050095.
- c. The Permittee shall analytically verify the conversion of sodium sulfite to sodium sulfate in the discharged scrubbant on a weekly basis. The Permittee may request the testing frequency be reduced if the tests demonstrate a consistently high conversion. This requirement was established in Permit 96050095. For the purpose of this condition, a consistently high conversion is at least 85 percent conversion for at least ten consecutive samplings.

7.3.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 258 sulfonation process to demonstrate compliance with Conditions 5.5.1 and 7.3.3 through 7.3.8, pursuant to Section 39.5(7)(b) of the Act:

a. Records for Startup

The Permittee shall maintain the following records, pursuant to Section 39.5(7)(b) of the Act, for each affected Unit 258 sulfonation process subject to Condition 7.3.3(d), which at a minimum shall include:

- i. The following information for each cold startup of the sulfur burner (15-3011):
 - A. Date and duration of the startup, i.e., start time and time normal operation achieved, i.e., operating temperature of 300 °F;
 - B. If normal operation was not achieved within 12 hours, an explanation why startup could not be achieved in 12 hours;
 - C. A detailed description of the startup, including reason for operation and whether preheating occurred at the normal rate;
 - D. An explanation why established startup procedures could not be performed, if not performed;
 - E. The nature of SO₂ emissions, i.e., severity and duration, during the startup and the nature of SO₂ emissions at the conclusion of startup, if above normal; and
 - F. Whether exceedance of Condition 7.3.3(c) may have occurred during startup, with explanation and estimated duration (minutes).
- ii. A maintenance and repair log for the sulfur burner (15-3011), listing each activity performed with date.

b. Records of operation and emissions of the affected Unit 258 sulfonation process:

- i. Quantity of batches produced (batches/month and batches/year);
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.3.12;
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - iv. SO₂, sulfuric acid, and VOM emissions in units specified by the emission limits in Condition 7.3.6 (ton/month and ton/year); and
 - v. The aggregate annual VOM and SO₂ emissions from the affected unit 258 sulfonation process, with supporting calculations. This information for annual VOM emissions shall be included with the records required by Condition 5.6.2(e).
- c. Records of operation and emissions of the emissions control devices:
- i. Scrubbant pH;
 - ii. Flow rate of scrubbant through the caustic scrubber (gal/hr);
 - iii. Operating log showing the time and duration of operation while the caustic scrubber is not operating due to malfunction or breakdown; and
 - iv. Sulfur burn rate during malfunction or breakdown periods.

7.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 258 sulfonation process with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. The Permittee shall notify the Illinois EPA Compliance Section of emissions or operation in excess of the limits specified in Condition 7.3.5 or 7.3.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.
- b. Prior to carrying out these emission measurements in Condition 7.3.7, the Illinois EPA's regional office and the Illinois EPA's Source Emission Test Specialist shall be notified a minimum of thirty (30) days prior to the expected date of these initial measurements and further notified a minimum of five (5) working days prior to the measurement of the exact date and time to enable the Illinois EPA to witness these measurements. Three (3) copies of the Final Report(s) for emission measurements shall be submitted to the Illinois EPA within 14 days after the test results are compiled and finalized.

7.3.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to the affected Unit 258 sulfonation process without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.3.5 and 7.3.6.

7.3.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.3.5 and the testing requirements of Condition 7.3.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.3.8, 7.3.9, and 7.3.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.3.9(b). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.3.10.

7.4 Unit 258: ABSA Receiver Tank

7.4.1 Description

The ABSA Receiver tank is used for the storage of alkylbenzene sulfonic acid manufactured in Unit 258.

7.4.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0553	ABSA Receiver Tank (12,000 Gallons)	None

7.4.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 258 storage tank" for the purpose of these unit-specific conditions, is a storage tank used in Unit 258 with a storage capacity of less than 40,000 gallons, as listed in Condition 7.4.2.
- b. The affected Unit 258 storage tank is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 258 storage tank is subject to the requirements of 35 IAC 219.122(b) because the affected Unit 258 storage tank has a storage capacity greater than 946 liters (250 gallons).

7.4.4 Non-Applicability of Regulations of Concern

- a. The affected Unit 258 storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because the tank has a capacity of less than 40,000 gallons.
- b. This permit is issued based on the affected Unit 258 storage tank not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 258 storage tank does not use an add-on control device to

achieve compliance with an emission limitation or standard.

7.4.5 Control Requirements

The affected Unit 258 storage tank shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3 °K (70 °F) [35 IAC 219.122(b) and (c)].

7.4.6 Emission Limitations

There are no specific emission limitations for this unit, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.4.7 Testing Requirements

None

7.4.8 Inspection Requirements

None

7.4.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 258 storage tank to demonstrate compliance with Conditions 5.5.1 and 7.4.5, pursuant to Section 39.5(7) (b) of the Act:

- a. The Permittee shall maintain records of the following items for the affected Unit 258 storage tank. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.
 - i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and

- ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f)].
- b. The Permittee shall maintain, the identification and properties of each organic liquid stored at the source, as related to emissions, i.e., vapor pressure and molecular weight.
- c. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid stored at the source, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.4.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 258 storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 258 storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.

7.4.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.4.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.4.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.4.9 and 7.4.10.
- b. Emissions from the affected Unit 258 storage tank shall be determined by the recordkeeping requirements in Condition 7.4.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

7.5 RESERVED

7.6 Unit 258: Still
 Control: Condenser

7.6.1 Description

In the Unit 258 Neutral Calcium Sulfonate Process, alkylbenzene sulfonic acid is neutralized to manufacture the final lubricating oil product. Residual water is removed from the product using a still, with VOM emissions controlled by a condenser.

7.6.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0620	Neutralizer	None
27-0607	Still	Condenser 17-0637

7.6.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 258 neutralizer and still" for the purpose of these unit-specific conditions, are emission units used in the production of lubricating oil, as listed in Condition 7.6.2.
- b. The affected Unit 258 neutralizer and still are subject to 35 IAC 219, Subpart G, Use of Organic Material, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 258 neutralizer and still are subject to the control requirements of 35 IAC 219 Subpart V: Batch Operations, because this source has SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below.
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation

with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and

- ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].
- d. The affected Unit 258 neutralizer and still are subject to 35 IAC 214 Subpart K, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2,000 ppm [35 IAC 214.301].

7.6.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 258 neutralizer and still not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- b. This permit is issued based on the affected Unit 258 neutralizer and still not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 258 neutralizer and still not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 258 neutralizer and still do not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using this emission units.

- d. This permit is issued based on the affected Unit 258 neutralizer and still not being subject to 40 CFR Part 61, Subpart FF, National Emission Standard for Benzene Waste Operations, because affected Unit 258 neutralizer and still is included in the exemption in 40 CFR 61.342(c)(3)(ii). The total annual benzene quantity in all waste streams chosen for exemption does not exceed 2.0 Mg/yr (2.2 ton/yr) as determined in the procedures in 40 CFR 61.355(j). The source-wide reporting requirement for this exemption is in Condition 5.7.4(c)(i) of this permit.

7.6.5 Control Requirements And Operational And Production Limits

- a. The Permittee shall follow good operating practices for the affected Unit 258 neutralizer and still, including periodic inspection, routine maintenance and prompt repair of defects. Good operating practices may include equipment manufacturer recommendations or practices common to the batch chemical manufacturing industry. At all times the Permittee shall, to the extent practicable, maintain and operate the equipment, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.
- b. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- c. In the event that the operation of this source results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, change in raw material or installation of controls, in order to eliminate the nuisance.

7.6.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.6.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
 - b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].
 - c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in 35 IAC 219.501 [35 IAC 219.503(f)]:
 - i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];
 - ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f)(2)]; and
 - iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f)(3)];
- A. The sampling time for each run shall be as follows:
1. For batch cycles less than eight hours in length, readings shall be

taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.

2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC 219.503(f)(3)(A)(i) (see also subsection (d)(iii)(A)(1) of this Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection (d)(iii)(A)(1) of this Condition. For each emission event of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process

knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d) (iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d) (ii) of this Condition), then such event is not an emission event for purposes of this Condition;
- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d) (i) of this Condition) throughout the batch cycle;
- C. The mass emission rate from the control device outlet shall be obtained by

combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and

- D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.
- d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].
- e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].

7.6.8 Monitoring Requirements

- a. Every owner or operator using a condenser to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:
 - i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius [35 IAC 219.504(d)(1)]; or
 - ii. A VOM monitoring device used to indicate the concentration of VOM exiting the control device based on a detection principle such as infra-red photoionization, or thermal conductivity, each equipped with a continuous recorder [35 IAC 219.504(d)(2)].

7.6.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 258 neutralizer and still to demonstrate compliance with Conditions 5.5.1 and 7.6.5 through 7.6.8, pursuant to Section 39.5(7) (b) of the Act:

- a. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.6.7, which include the following [Section 39.5(7) (e) of the Act]:
 - i. The date, place and time of sampling or measurements;
 - ii. The date(s) analyses were performed;
 - iii. The company or entity that performed the analyses;
 - iv. The analytical techniques or methods used;
 - v. The results of such analyses; and
 - vi. The operating conditions as existing at the time of sampling or measurement.
- b. The Permittee shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].
- c. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under 35 IAC 219.504 (see also Condition 7.6.8).
 - i. For a condenser, the average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while

the vent stream is routed normally [35
IAC 219.505(c) (3) (B)]; or

- ii. As an alternative to Condition 7.6.9(c) (i), at a minimum, records indicating the concentration level or reading indicated by the VOM monitoring device at the outlet of the scrubber, condenser, or carbon absorber, measured continuously and averaged over the same time period as the performance test (while the vent stream is routed normally) [35 IAC 219.505(c) (3) (D)].
- d. Records addressing use of good operating practices for the Condenser (17-0637):
- i. Records for periodic inspection of the condensers with date, individual performing the inspection, and nature of inspection; and
 - ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- e. Records of operation and emissions of the affected Unit 258 neutralizer and still:
- i. Quantity of batches produced (batches/month and batches/year);
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.6.12;
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor; and
 - iv. The aggregate annual VOM emissions from the affected Unit 258 neutralizer and still, with supporting calculations.

7.6.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the affected Unit 258 neutralizer and still with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].

7.6.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.6.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.6.9. These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation.

7.7 Unit 258: Filter Aid Weigh Bins
 Control: Baghouses

7.7.1 Description

The weigh bins are used for storage and distribution of filter aid for the calcium sulfonate process.

7.7.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
41-0205	South Filter Aid Weigh Bin	Baghouse 09-0205
41-0206	North Filter Aid Weigh Bin	Baghouse 09-0206

7.7.3 Applicability Provisions and Applicable Regulations

a. The "affected Unit 258 weigh bins" for the purpose of these unit-specific conditions, are emission units used for material handling operations in Unit 258, as listed in Condition 7.7.2.

b. The affected Unit 258 weigh bins are subject to 35 IAC 212.322, which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.322 (See also Attachment 2) [35 IAC 212.322(a)].

7.7.4 Non-Applicability of Regulations of Concern

This permit is issued based on the affected Unit 258 weigh bins not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 258 weigh bins do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.7.5 Operational And Production Limits And Work Practices

The Permittee shall maintain and operate the associated control equipment (baghouses and filters), including periodic inspections, routine maintenance, repair of defects, and visual emission checks, to demonstrate compliance with Condition 7.7.3(b).

7.7.6 Emission Limitations

There are no specific emission limitations for this unit, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.7.7 Testing Requirements

None

7.7.8 Monitoring Requirements

None

7.7.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 258 weigh bins to demonstrate compliance with Condition 5.5.1, pursuant to Section 39.5(7)(b) of the Act:

- a. Operating rate of the baghouses (dscf per minute and minutes per year);
- b. Records of maintenance of the baghouses, including periodic inspections, routine maintenance, repair of defects, and visual emission checks; and
- c. PM emissions, with supporting calculations (lb/year).

7.7.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 258 weigh bin with the permit requirements, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

7.7.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.7.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.7.9 and a controlled emission factor of 0.04 gr/dscf.

7.8 Unit 266: Batch Reactor Trains
Control: Scrubbers, Condensers, Flare, Baghouse

7.8.1 Description

In the Unit 266 Process, zinc dialkyldithiophosphate (ZDDP) products (lubricating oils) are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, and a flare. In addition, PM emissions from the neutralizers are controlled by a baghouse.

7.8.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0142	Thio Acid Reactor	Condensers, H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011
27-1244	Thio Acid Reactor	
27-0143	Degasser/Hold Tank	H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011
27-0195	Degasser/Hold Tank	
27-2425	Neutralizer	Condensers, Scrubbers, Flare 36-0011, Baghouse 09-1425
27-1426	Neutralizer	

7.8.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 266 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of zinc dialkyldithiophosphate products, as listed in Condition 7.8.2.
- b. The affected Unit 266 reactor systems shall comply with 35 IAC 219, Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.8.3(b) (ii) below) and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
 - ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.8.3(b) (i) above) are allowable if

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].

- c. The affected Unit 266 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].
- d. The affected Unit 266 reactor systems are subject to 35 IAC 212.321, which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 (See also Attachment 2) [35 IAC 212.321(a)].
- e. The affected Unit 266 reactor systems are subject to 35 IAC 214 Subpart O, which provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:

- i. Said flares are operative on existing batch type processes [35 IAC 214.383(a)]; and
 - ii. The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period (230 kg/hr and 1590 kg/8 hrs) [35 IAC 214.383(c)]; and
 - iii. Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls [35 IAC 214.383(d)].
- f. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare or H₂S scrubber system, the Permittee is authorized to continue operation of the affected Unit 266 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or H₂S scrubber or remove the affected Unit 266 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare or H₂S scrubber system.
- iii. The Permittee shall take reasonable measures to reduce SO₂ emissions of the ZDDP Process during malfunction or breakdown of the scrubber system or flare. At a minimum, these measures shall include stoppage of the ZDDP Process by ceasing the addition of raw materials if the process has passed the point where such a stoppage would not interfere with product quality.
- iv. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.8.9(a) and 7.8.10(a).

- v. For the purpose of this condition, a malfunction or breakdown of the H₂S scrubber system includes those occasions when the H₂S scrubber system fails to operate in a normal and usual manner and is unable to reduce total SO₂ emission to the atmosphere (following flaring) attributable to the ZDDP Process.
- vi. For the purpose of this condition, a malfunction or breakdown of the flare includes those occasions when the flame is out or when there is a lower flame temperature than designed. The processes that exhaust to the flare may be operated for a maximum of 9 hours during malfunction or breakdown of the flare.
- vii. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.8.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 266 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- b. This permit is issued based on the affected Unit 266 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 266 reactor systems not being subject to 35 IAC 214.301 because 35 IAC 214.383 provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares

at a chemical manufacturing plant that meets the specifications in Condition 7.8.3(e).

- d. This permit is issued based on the affected Unit 266 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 266 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.8.5 Control Requirements and Production Limits

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.
- d. The H₂S scrubber system (combination primary and secondary scrubbers) shall operate at a minimum efficiency of 98.0% for removal of H₂S. Compliance shall be determined monthly from a running total of monthly material balance data and by operating the

scrubber according to the following requirements established in Permits 95090198 and 98100080:

- i. The scrubber system shall operate as a two-stage system, that is, a primary stage and secondary stage, except when the primary scrubber is being drained and recharged with fresh scrubbant. After recharge, the former primary scrubber will become the secondary scrubber.
- ii. The scrubber system shall operate at the following levels, at which compliance with the hourly SO₂ emission limit has been demonstrated.
 - A. Minimum flow rate of scrubbant in an operating scrubber: 50 gal/min (hourly average).
 - B. Maximum duration of operation with secondary scrubber following breakthrough of primary scrubber (i.e., when primary scrubber is off-line for recharging): 6 hours.
- iii. For the purpose of the above conditions, breakthrough of the primary scrubber shall be deemed to occur when the scrubbant temperature at the outlet of the secondary scrubber increases by 10°C in one hour or exceeds 75°C, whichever occurs first. The temperature measurements shall be taken at 15 minute intervals. If the 10°C increase is exceeded in a one-hour period, a warning message should be conveyed to the operator, who must log the information.
- e. Production of ZDDP Products (including the process oil added during filtration) shall not exceed 683 batches per month and 6,827 batches per year. These limits contain revisions to previously issued Permit 98100080. Specifically, the limits were changed from a weight basis to a batch basis.

7.8.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 266 reactor systems are subject to the following:

- a. VOM emissions from the affected Unit 266 reactor systems shall not exceed the following limits:

<u>Equipment</u>	<u>VOM Emissions</u>	
	<u>(Ton/Month)</u>	<u>(Ton/Year)</u>
Vacuum Pump Vent	0.7	7.0
Unit 266 Operations	---	5.80

These limits are based on the maximum emission estimates using material balance equations. The annual Unit 266 VOM limit includes emissions from the flare, fugitive emissions, and emissions from storage tanks listed in Section 7.9.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permits 95090198 and 98100080, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- b. Emissions from the affected Unit 266 reactor systems shall not exceed the following limits:

<u>(Ton/Month)</u>	<u>SO₂ Emissions</u>	<u>(Ton/Year)</u>
10.77		107.7

These limits are based on the an emission factor of 0.046 lb H₂S/lb product, a 98% scrubber removal efficiency for hydrogen sulfide (H₂S), and a 100% conversion of H₂S to SO₂ in the flare. This limit includes 4.8 tons of SO₂ per year from H₂S that is vented directly to the flare at a rate of 0.086 lb/ton product. A conversion factor of 1.88 was used for the conversion of H₂S to SO₂. ZDDP Production

rates include the process oils added during filtration.

Compliance with the short term limit is required during startup. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 98100080, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 (see also Attachment 3) [T1].

7.8.7 Testing Requirements

Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503. The flare shall comply with the requirements of 40 CFR 60.18, as required by Condition 7.8.5(e) [35 IAC 219.503(b) and (c)].

7.8.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b)].

7.8.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected Unit 266 reactor system to demonstrate compliance with Conditions 5.5.1 and 7.8.5 through 7.8.8, pursuant to Section 39.5(7)(b) of the Act:

- a. Records for Malfunctions and Breakdowns of Flare or H₂S Scrubber System

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 266 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare or H₂S scrubber system, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
 - ii. A detailed explanation of the malfunction or breakdown;
 - iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 266 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
 - iv. The measures used to reduce the quantity of emissions and the duration of the event;
 - v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
 - vi. The amount of release above typical emissions during malfunction/breakdown.
- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.8.8 (see 35 IAC 219.504).
- i. Continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c)(2)].
- c. Records addressing use of good operating practices for the emissions control devices:
- i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine

- maintenance performed including dates and duration of any outages;
- iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c)(1) or (c)(2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].
- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:
- i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 266 reactor systems:
- i. Quantity of batches produced (batches/month and batches/year).

- ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.8.12.
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor.
 - iv. VOM and SO₂ emissions in units specified by the emission limits in Condition 7.8.6 (ton/month and ton/year).
 - v. The aggregate annual VOM, SO₂, and PM emissions from the affected unit 266 reactor systems, with supporting calculations.
- g. Records of operation and emissions of the emissions control devices:
- i. Monthly material balance information for H₂S recovered by the H₂S scrubber system (percent recovery);
 - ii. Flow rate of scrubbant through the H₂S scrubber system (gal/hr);
 - iii. Operating log showing the time and duration of operation while the primary scrubber is off-line for recharging; and
 - iv. Operating log showing the temperature (°C) at the outlet of the secondary scrubber, measured every 15 minutes during operation.

7.8.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 266 reactor system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Reporting of Malfunctions and Breakdowns for Flare or H₂S Scrubber System

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 266 reactor systems subject to Condition 7.8.3(f) during malfunction or breakdown of the control features of the flare or H₂S scrubber system.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
 - ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 266 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the Unit 266 reactor systems were taken out of service.
 - iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the Unit 266 reactor systems will be taken out of service.
- b. i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.8.3(c)(i)), shall notify the Illinois EPA in

writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].

- ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].
- c. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.8.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.
- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions or operation in excess of the limits specified in Condition 7.8.5 or 7.8.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.8.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 266 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not

affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Modes of operation of the affected Unit 266 reactor systems without the control required by Condition 7.8.5(a) is allowed, provided that the emissions during such modes of operation do not exceed the de minimis emission levels listed in Condition 7.8.3(c) (e.g., triethylamine salt product). However, the recordkeeping and reporting requirements in Section 7.8.9(d) (see also 35 IAC 219.505) shall apply to such de minimis single unit operations and batch process trains [35 IAC 219.500(c)].

7.8.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.8.5 and the testing requirements of Condition 7.8.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.8.8, 7.8.9, and 7.8.12.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.8.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.8.10.
- c. The operation of the ZDDP Process (Unit 266) without the scrubber system in operation or with the scrubber system out of compliance with the operational limits in Condition 7.8.5(d) shall be considered to be a violation of the SO₂ emission limits in Condition 7.8.6, except as allowed by Condition 7.8.3(e).

7.9 Unit 266: Storage Tanks

7.9.1 Description

These storage tanks are used for the storage and blending of raw materials or products for the Unit 266 processes.

7.9.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0300	Isopropanol Storage Tank (35,000 gallons)	None
35-0340	Raw Material Storage Tank (48,000 gallons)	Carbon Drums
35-0310	Raw Material Storage Tank (35,000 gallons)	None
35-0315	Raw Material Storage Tank (35,000 gallons)	None
35-0320	Raw Material Storage Tank (35,000 gallons)	None
35-0184	Raw Material Blend Tank (2,950 gallons)	None
35-0205	Product Storage Tank (20,000 gallons)	Scrubber, Flare
35-0135	Alcohol Condensate Storage Tank (7,500 gallons)	Carbon Drums
35-3217	Filter Feed Tank (7,500 gallons)	None
35-3218	Filter Feed Tank (7,500 gallons)	None
35-3219	Filter Feed Tank (3,000 gallons)	None
35-0100	Wash Oil Storage Tank (3,000 gallons)	None
35-3220	Filtrate Receiver Tank (15,000 gallons)	None
35-2066	Product Storage Tank (27,000 gallons)	None
35-2087	Product Storage Tank (27,000 gallons)	None
35-0325	Product Storage Tank (48,000 gallons)	None
35-0330	Product Storage Tank (48,000 gallons)	None
35-2088	Product Storage Tank (48,000 gallons)	None

7.9.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 266 storage tank" for the purpose of these unit-specific conditions, is a storage tank used for materials in Unit 266, as listed in Conditions 7.9.1 and 7.9.2.
- b. The affected Unit 266 storage tanks are subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 266 storage tanks are subject to the requirements of 35 IAC 219.122(b) because the affected Unit 266 storage tanks each have a storage capacity greater than 946 liters (250 gallons).

7.9.4 Non-Applicability of Regulations of Concern

- a. The affected Unit 266 storage tanks are not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because the tanks either have a capacity of less than 40,000 gallons or store a liquid with a maximum true vapor pressure of less than 0.5 psia.
- b. Tanks 35-0100, 0135, 0184, 3217, 3218, and 3219 are not subject to the requirements of 40 CFR 60, Subpart Kb because these storage tanks have a capacity less than 40 m³ (10,567 gallon).
- c. This permit is issued based on the affected Unit 266 storage tanks not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 266 storage tanks either do not use an add-on control device to achieve compliance with an emission limitation or standard or do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.9.5 Operational and Production Limits and Work Practices

- a. The affected Unit 266 storage tanks shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3 °K (70 °F) [35 IAC 219.122(b) and (c)].
- b. The Permittee shall not store any organic material with a maximum true vapor pressure of 0.75 psia or greater in Emission Units 35-0325, 35-0330, 35-0340, and 35-2088. Storage of such material requires the use of emission control equipment, pursuant to 35 IAC 219.120.

7.9.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 266 storage tanks are subject to the following:

- a. VOM emissions from all storage tanks in Unit 266 shall not exceed 1.87 tons per year. This limit is based on the maximum emissions estimates using calculation procedures in Condition 7.9.12. This limit is a subset of the VOM limit in Condition 7.8.6.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 95090198, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.9.7 Testing Requirements

None

7.9.8 Inspection Requirements

None

7.9.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 266 storage tanks to demonstrate compliance with Conditions 5.5.1, 7.9.5, and 7.9.6, pursuant to Section 39.5(7)(b) of the Act:

- a. The Permittee shall maintain records of the following items for the affected Unit 266 storage tank. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.
 - i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and
 - ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f)].
- b. The Permittee shall maintain, the identification and properties of each organic liquid stored at the source, as related to emissions, i.e., vapor pressure and molecular weight.
- c. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid stored at the source, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.9.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 266 storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 266 storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
- b. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM or operation in excess of the limits specified in Condition 7.9.5 7.9.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.9.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.9.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.9.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.9.9 and 7.9.10.
- b. Emissions from the affected Unit 266 storage tank shall be determined by the recordkeeping requirements in Condition 7.9.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.10 Unit 280: Batch Reactor Trains
 Control: Scrubbers, Condensers, Flare

7.10.1 Description

In the Unit 280 Process, sulfurized isobutylene (SIB) products (lubricating oil additive) are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, and a flare.

7.10.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0201	First Stage SIB Reactor	HCl Scrubbers, Flare 36-0011
27-0301	Second Stage SIB Reactor	Condensers, H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011
27-0302	Second Stage SIB Reactor	
27-2501	Brine Acidifier	H ₂ S Scrubber System (33-2421 and 33-2422), Flare 36-0011

7.10.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 280 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of lubricating oil additive, as listed in Condition 7.10.2.
- b. The affected Unit 280 reactor systems shall comply with 35 IAC 219, Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.10.3(b) (ii) below) and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].

- ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.10.3(b) (i) above) are allowable if such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].

- c. The affected Unit 280 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d) (1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d) (2)].

- d. The affected Unit 280 reactor systems are subject to 35 IAC 214 Subpart O, which provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:
 - i. Said flares are operative on existing batch type processes [35 IAC 214.383(a)]; and
 - ii. The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period (230 kg/hr and 1590 kg/8 hrs) [35 IAC 214.383(c)]; and

iii. Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls [35 IAC 214.383(d)].

e. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare or H₂S scrubber system, the Permittee is authorized to continue operation of the affected Unit 280 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or H₂S scrubber or remove the affected Unit 280 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare or H₂S scrubber system.
- iii. The Permittee shall take reasonable measures to reduce SO₂ emissions of the SIB Process during malfunction or breakdown of the scrubber system or flare. At a minimum, these measures shall include stoppage of the SIB Process by ceasing the addition of raw materials if the process has passed the point where such a stoppage would not interfere with product quality.
- iv. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.10.9(a) and 7.10.10(a).
- v. For the purpose of this condition, a malfunction or breakdown of the H₂S scrubber system includes those occasions when the H₂S scrubber system fails to operate in a normal and usual manner and is unable to reduce total SO₂ emission to the atmosphere (following flaring) attributable to the SIB Process.

- vi. For the purpose of this condition, a malfunction or breakdown of the flare includes those occasions when the flame is out or when there is a lower flame temperature than designed. The processes that exhaust to the flare may be operated for a maximum of 9 hours during malfunction or breakdown of the flare.
- vii. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.10.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 280 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- b. This permit is issued based on the affected Unit 280 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 280 reactor systems not being subject to 35 IAC 214.301 because of the exemption in 35 IAC 214.383 (see also Condition 7.10.3(d)).
- d. This permit is issued based on the affected Unit 280 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 280 reactor systems do not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the

Permittee if these chemicals are produced using these emission units.

7.10.5 Control Requirements

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.
- d. The H₂S scrubber system (combination primary and secondary scrubbers) shall operate at a minimum efficiency of 98.0% for removal of H₂S. Compliance shall be determined monthly from a running total of monthly material balance data and by operating the scrubber according to the following requirements established in Permits 95090198 and 98100080:
 - i. The scrubber system shall operate as a two-stage system, that is, a primary stage and secondary stage, except when the primary scrubber is being drained and recharged with fresh scrubbant. After recharge, the former primary scrubber will become the secondary scrubber.

- ii. The scrubber system shall operate at the following levels, at which compliance with the hourly SO₂ emission limit has been demonstrated.
 - A. Minimum flow rate of scrubbant in an operating scrubber: 50 gal/min (hourly average).
 - B. Maximum duration of operation with secondary scrubber following breakthrough of primary scrubber (i.e., when primary scrubber is off-line for recharging): 6 hours.
- iii. For the purpose of the above conditions, breakthrough of the primary scrubber shall be deemed to occur when the scrubbant temperature at the outlet of the secondary scrubber increases by 10°C in one hour or exceeds 75°C, whichever occurs first. The temperature measurements shall be taken at 15 minute intervals. If the 10°C increase is exceeded in a one-hour period, a warning message should be conveyed to the operator, who must log the information.

7.10.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 280 reactor systems are subject to the following:

- a. VOM emissions from the reactors 27-201, 27-301, and 21-302 shall not exceed 4.0 pounds per batch and 4.8 tons per year. These limits are based on the maximum emission estimates using material balance equations.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations contain revisions to previously issued Permit 91080008. The source has requested that the Illinois EPA establish conditions in this permit that allow various refinements from the conditions of this aforementioned permit, consistent with the information provided in the CAAPP

application. The source has requested these revisions and has addressed the applicability and compliance of Title I of the CAA, specifically 35 IAC Part 203, Major Stationary Sources Construction and Modification. These limits continue to ensure that the construction and/or modification addressed in this permit does not constitute a new major source or major modification pursuant to these rules. These limits are the primary enforcement mechanism for the equipment and activities permitted in this permit and the information in the CAAPP application contains the most current and accurate information for the source. Specifically, the short term limit was changed from an hourly basis to a batch basis [T1R].

- b. Emissions from the reactors 27-201, 27-301, and 21-302 shall not exceed the following limits:

<u>Pollutant</u>	<u>Emissions (Lb/Hour)</u>	<u>(Ton/Year)</u>
SO ₂	16.4	71.8
H ₂ S	0.8	3.5
PM	0.22	1.0

These limits are based on the maximum emission estimates using material balance equations.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 91080008, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1].

7.10.7 Testing Requirements

Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503. The flare shall comply with the requirements of

40 CFR 60.18, as required by Condition 7.10.5(e) [35 IAC 219.503(b) and (c)].

7.10.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b)].

7.10.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 280 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.10.5 through 7.10.8, pursuant to Section 39.5(7)(b) of the Act:

- a. Records for Malfunctions and Breakdowns of Flare or H₂S Scrubber System

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 280 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare or H₂S scrubber system, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 280 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;
- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
- vi. The amount of release above typical emissions during malfunction/breakdown.

- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.10.8 (see 35 IAC 219.504).
 - i. Continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c)(2)].
- c. Records addressing use of good operating practices for the emissions control devices:
 - i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c)(1) or (c)(2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].
- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:

- i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 280 reactor systems:
- i. Quantity of batches produced (batches/month and batches/year);
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.10.12;
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - iv. VOM, SO₂, H₂S, and PM emissions in units specified by the emission limits in Condition 7.10.6 (lb/hr or lb/batch and ton/year); and
 - v. The aggregate annual VOM emissions from the affected unit 280 reactor systems, with supporting calculations.
- g. Records of operation and emissions of the emissions control devices:
- i. Monthly material balance information for H₂S recovered by the H₂S scrubber system (percent recovery);
 - ii. Flow rate of scrubbant through the H₂S scrubber system (gal/hr);

- iii. Operating log showing the time and duration of operation while the primary scrubber is off-line for recharging; and
- iv. Operating log showing the temperature (°C) at the outlet of the secondary scrubber, measured every 15 minutes during operation.

7.10.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 280 reactor system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Reporting of Malfunctions and Breakdowns for Flare or H₂S Scrubber System

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 280 reactor systems subject to Condition 7.10.3(e) during malfunction or breakdown of the control features of the flare or H₂S scrubber system.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 280 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the Unit 280 reactor systems were taken out of service.

- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the Unit 280 reactor systems will be taken out of service.

- b.
 - i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.10.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].

 - ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].

- c. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.10.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or

measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.

- ii. The average flow rate in scfm and documentation verifying this value.

- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions in excess of the limits specified in Condition 7.10.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.10.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.10.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.10.5 and the testing requirements of Condition 7.10.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.10.8, 7.10.9, and 7.10.10.

- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.10.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.10.8.

- c. The operation of the SIB Process (Unit 280) without the scrubber system in operation or with the scrubber system out of compliance with the operational limits in Condition 7.10.5(d) shall be considered to be a violation of the SO₂ emission limits in Condition 7.10.6, except as allowed by Condition 7.10.3(e).

7.11 Unit 280: Tanks
Control: Scrubber, Flare

7.11.1 Description

The storage tanks are used for the storage of process intermediates in Unit 280.

7.11.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0102	Adduct Tank (7,000 Gallons)	Scrubber 10-2236, Flare 36-0011
35-0103	Adduct Tank (7,000 Gallons)	
35-0107	Adduct Tank (7,000 Gallons)	

7.11.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 280 storage tanks" for the purpose of these unit-specific conditions, are storage tanks used in Unit 280 with a storage capacity of less than 40,000 gallons, as listed in Condition 7.11.2.
- b. Each affected Unit 280 storage tank is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. Each affected Unit 280 storage tank is subject to the requirements of 35 IAC 219.122(b) because each affected Unit 280 storage tank has a storage capacity greater than 946 liters (250 gallons).
- d. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare, the Permittee is authorized to continue operation of the affected Unit 280 storage tanks in violation of the applicable requirement of 35 IAC 219.301, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 280 storage tanks from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.11.9(a) and 7.11.10(a).
- iv. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.11.4 Non-Applicability of Regulations of Concern

- a. Each affected Unit 280 storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because each storage tank has a capacity of less than 40,000 gallons.
- b. Each affected Unit 280 storage tank is not subject to the requirements of 40 CFR 60, Subpart Kb, because each storage tank has a storage capacity less than 40 m³ (approximately 10,567 gallons).
- c. This permit is issued based on each affected Unit 280 storage tank not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because each affected Unit 280 storage tank does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.11.5 Control Requirements

Each affected Unit 280 storage tank shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3°K (70°F) [35 IAC 219.122(b) and (c)].

7.11.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 280 storage tanks are subject to the following:

- a. VOM emissions from adduct storage tank 35-0107 shall not exceed 0.1 ton per year. This limit is based on the maximum emissions estimates using calculation procedures in Condition 7.11.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 82120030, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.11.7 Testing Requirements

None

7.11.8 Inspection Requirements

None

7.11.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected Unit 280 storage tank to demonstrate compliance with Conditions 5.5.1, 7.11.5, and 7.11.6, pursuant to Section 39.5(7)(b) of the Act:

a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 280 storage tanks subject to 35 IAC 219.301 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 280 storage tanks removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;
- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
- vi. The amount of release above typical emissions during malfunction/breakdown.

b. The Permittee shall maintain records of the following items for each affected Unit 280 storage tank. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.

- i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and

- ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f)].
- c. The Permittee shall maintain, the identification and properties of each organic liquid stored at the source, as related to emissions, i.e., vapor pressure and molecular weight.
- d. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid stored at the source, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.11.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 280 storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 280 storage tanks subject to Condition 7.11.3(d) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional

Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 280 storage tanks was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the Unit 280 storage tanks were taken out of service.

- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the Unit 280 storage tanks will be taken out of service.
- b. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 280 storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
- c. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.11.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.11.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.11.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.11.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.11.9 and 7.11.10.
- b. Emissions from the affected Unit 280 storage tank shall be determined by the recordkeeping requirements in Condition 7.11.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.12 Unit 290: Tanks

7.12.1 Description

The storage tanks are used for the storage and blending of raw materials or products in Unit 290.

7.12.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0840	Raw Material Storage Tank (60,270 Gallons)	None
35-0845	DFA/Generic Blend Storage Tank (150,000 Gallons)	None
35-0850	Solvent Storage Tank (60,000 Gallons)	None

7.12.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 290 large storage tanks" for the purpose of these unit-specific conditions, are storage tanks used in Unit 290 with a storage capacity of greater than or equal to 40,000 gallons, as listed in Condition 7.12.2.
- b. Each affected Unit 290 large storage tank is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. Each affected Unit 290 large storage tank is subject to the requirements of 35 IAC 219.122(b) because each storage tank has a storage capacity greater than 946 liters (250 gallons).
- d. Each affected Unit 290 large storage tank is subject to 40 CFR 60 Subpart Kb because construction date of these tanks is after the applicability date of July 23, 1984 and the capacity of each tank is greater than 40 m³ (approximately 10,567 gallons). The Illinois EPA is administering these standards in Illinois on behalf of the USEPA under a delegation agreement. Except for the recordkeeping in Condition 7.12.9 (see also 40 CFR 60.116b), these tanks are exempt from the provisions of 40 CFR 60, Subpart Kb.

7.12.4 Non-Applicability of Regulations of Concern

- a. Each affected Unit 290 large storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because each storage tank stores a liquid with a maximum true pressure of less than 0.5 psia.
- b. This permit is issued based on each affected Unit 290 large storage tank not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because each affected Unit 290 large storage tank either does not use an add-on control device to achieve compliance with an emission limitation or standard or does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.12.5 Control Requirements

- a. Each affected Unit 280 storage tank shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3°K (70°F) [35 IAC 219.122(b) and (c)].
- b. Vapor pressure of any materials stored in this storage tank shall not exceed 0.15 psia, except Tank 35-0840 may store material with a vapor pressure up to 0.5 psia at a storage temperature of 250°F. These limit was established in Permits 87070056 and 96070097.

7.12.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 290 large storage tanks are subject to the following:

- a. VOM emissions from the Tanks 35-0840, 35-0845, and 35-0850 shall not exceed 0.3 ton/month and 2.23 ton/year. These limits are based on the vapor pressure limit in Condition 7.12.5 and maximum emissions estimates using calculation procedures in Condition 7.12.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 96070097, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.12.7 Testing Requirements

None

7.12.8 Inspection Requirements

None

7.12.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected Unit 290 large storage tank to demonstrate compliance with Conditions 5.5.1, 7.12.5, and 7.12.6, pursuant to Section 39.5(7)(b) of the Act:

- a. The Permittee shall maintain records of the following items for each affected Unit 290 large storage tank. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.
 - i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and
 - ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f) and 40 CFR 60.116b(b)].

- b. The Permittee shall maintain, the identification and properties of each organic liquid stored at the source, as related to emissions, i.e., vapor pressure and molecular weight.
- c. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid stored at the source, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.12.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 290 large storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. The owner or operator of each storage vessel with a design capacity greater than or equal to 151 m³ (approximately 39,890 gal) storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa (approximately 0.75 psia) shall notify the Illinois EPA within 30 days when the maximum true vapor pressure of the liquid exceeds 5.2 kPa (approximately 0.75 psia) [40 CFR 60.116b(d)].
- b. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 290 large storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.

- c. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.12.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.12.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.12.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.12.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.12.9 and 7.12.10.
- b. Available data on the storage temperature may be used to determine the maximum true vapor pressure as specified in 40 CFR 60.116b(e).
- c. Emissions from each affected Unit 290 large storage tank shall be determined by the recordkeeping requirements in Condition 7.12.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.13 Unit 290: Batch Reactor Trains
Control: Condensers, Scrubbers, Flare

7.13.1 Description

In the Unit 290 Process, thiadiazole products (lubricating oils) are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, and a flare. In addition, carbon drums are used for odor control.

7.13.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0200	First Stage Thiadiazole Reactor	Condensers, Scrubbers, CS ₂ Recovery System, Flare 36-0011
27-0100	Second Stage Thiadiazole Reactor	Condensers, Scrubber 05-0600, Carbon Drums

7.13.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 290 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of thiadiazole products, as listed in Condition 7.13.2.
- b. The affected Unit 290 reactor systems shall comply with 35 IAC 219, Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.13.3(b)(ii) below) and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
 - ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.13.3(b)(i) above) are allowable if such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].

- c. The affected Unit 290 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
- i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].
- d. The affected Unit 290 reactor systems are subject to 35 IAC 214 Subpart O, which provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:
- i. Said flares are operative on existing batch type processes [35 IAC 214.383(a)]; and
 - ii. The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period (230 kg/hr and 1590 kg/8 hrs) [35 IAC 214.383(c)]; and
 - iii. Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls [35 IAC 214.383(d)].

e. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare, the Permittee is authorized to continue operation of the affected Unit 290 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 290 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.13.9(a) and 7.13.10(a).
- iv. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.13.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 290 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- b. This permit is issued based on the affected Unit 290 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].

- c. This permit is issued based on the affected Unit 290 reactor systems not being subject to 35 IAC 214.301 because of the exemption in 35 IAC 214.383 (see also Condition 7.13.3(d)).
- d. This permit is issued based on the affected Unit 290 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 290 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.13.5 Control Requirements

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flareheader and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.
- d. Production of DFA Products or generic blends (including the process oil added during filtration)

shall not exceed 20 million pounds year. This limitation was established in Permit 96070097.

- e. The carbon disulfide recovery system shall consist of two condensers in series. The first condenser, No. 17-220, shall use glycol or chilled water as a coolant with a maximum inlet temperature of 40 °F. The second condenser, No. 17-735, shall use a coolant with a maximum shell temperature of -35 °F. The discharge from this condenser shall be vented to an existing scrubber/flare to provide an overall efficiency greater than 95% removal and destruction of carbon disulfide. If the Unit 290 process is not operating, the tanks may bypass the condensers and vent directly to the flare. This condition was established in Permit 94110112.

7.13.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 290 reactor systems are subject to the following:

- a. SO₂ emissions from Flare 36-0011 attributable to thiadiazole manufacturing operations shall not exceed 34.9 tons/year. This limit is based on the operating limit in Condition 7.13.5 and conversion of carbon disulfide to SO₂ in the flare, assuming no absorption by the scrubber.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 94110112, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1].

- b. Fugitive VOM emissions from all thiadiazole manufacturing operations shall not exceed 4.8 ton/year. These limits are based on the number of components and a site-specific emission factor.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 94110112, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- c. HAP and PM emissions from the affected all thiadiazole manufacturing operations shall not exceed the following limits:

<u>Pollutant</u>	<u>Emissions (Lb/Hour)</u>	<u>(Ton/Year)</u>
Hydrazine (HAP)	0.1	0.44
PM	0.01	0.044

These limits are based on negligible emission rates of hydrazine and PM and were established in Permit 94110112.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

7.13.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
- b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].

- c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in 35 IAC 219.501 [35 IAC 219.503(f)]:
- i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];
 - ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f)(2)]; and
 - iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f)(3)];
- A. The sampling time for each run shall be as follows:
- 1. For batch cycles less than eight hours in length, readings shall be taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.
 - 2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC

219.503(f) (3) (A) (i) (see also subsection (d) (iii) (A) (1) of this Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection (d) (iii) (A) (1) of this Condition. For each emission event of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d) (iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit

operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d)(ii) of this Condition), then such event is not an emission event for purposes of this Condition;

- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle;
- C. The mass emission rate from the control device outlet shall be obtained by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and
- D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference

in inlet and outlet mass flow totals by
the inlet mass flow total.

- d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].
- e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].
- f. Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503 (see also Conditions 7.13.7(a) through (e)). The flare shall comply with the requirements of 40 CFR 60.18, as required by Condition 7.13.5(e) [35 IAC 219.503(b) and (c)].

7.13.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b)].
- b. Every owner or operator using a condenser to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:
 - i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius [35 IAC 219.504(d)(1)]; or
 - ii. A VOM monitoring device used to indicate the concentration of VOM exiting the control device based on a detection principle such as infra-

red photoionization, or thermal conductivity, each equipped with a continuous recorder [35 IAC 219.504(d)(2)].

7.13.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 290 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.13.5 through 7.13.8, pursuant to Section 39.5(7)(b) of the Act:

a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 290 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 290 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;
- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
- vi. The amount of release above typical emissions during malfunction/breakdown.

b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.13.8 (see 35 IAC 219.504).

- i. If using any of the following as a control device, the following records:
 - A. Where a flare is used, continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c)(2)].
 - B. Where a condenser is used, the average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally [35 IAC 219.505(c)(3)(B)]; or
 - C. As an alternative to Condition 7.13.9(b)(i)(B), at a minimum, records indicating the concentration level or reading indicated by the VOM monitoring device at the outlet of the scrubber, condenser, or carbon absorber, measured continuously and averaged over the same time period as the performance test (while the vent stream is routed normally) [35 IAC 219.505(c)(3)(D)].
- c. Records addressing use of good operating practices for the emissions control devices:
 - i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c)(1) or (c)(2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].
- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 290 reactor systems:
 - i. Quantity of batches produced (batches/month and batches/year).
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.13.12.
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor.
 - iv. VOM emissions in units specified by the emission limits in Condition 7.13.6 (lb/hr, ton/month, and ton/year).

- v. The aggregate annual VOM emissions from the affected unit 290 reactor systems, with supporting calculations.

7.13.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 290 reactor system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 290 reactor systems subject to Condition 7.13.3(e) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 290 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the Unit 290 reactor systems were taken out of service.
- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is

achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the Unit 290 reactor systems will be taken out of service.

- b. i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.13.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].
 - ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].
- c. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.13.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
- i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.

- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions or operation in excess of the limits specified in Conditions 7.13.5 or 7.13.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.13.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 266 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.13.5 and 7.13.6.

7.13.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.13.5 and the testing requirements of Condition 7.13.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.13.8, 7.13.9, and 7.13.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.13.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.13.8.

7.13.13 Compliance Plan/Schedule of Compliance

- a. The Permittee was sent Violation Notice A-2003-00066 by the Illinois EPA for allegedly failing to comply with the SO₂ emission limit in Condition 7.13.6 and 40 CFR 52.21, Prevention of Significant Deterioration (PSD), for the affected Unit 290 reactor system. Therefore, the permit shield in Section 8.1 does not shield the Permittee from possible enforcement actions initiated by either USEPA or the Illinois EPA involving the above named emission units or

activities. In addition, compliance with this permit does not serve as proof of compliance for the emission units or activities addressed in this pending enforcement action.

- b. The Permittee shall comply with the following schedule of compliance to address compliance with the alleged violations of 40 CFR 52.21:

Milestone	Timing
Submit a proposal and schedule for achieving compliance with PSD	No later than any schedule established pursuant to resolution of the pending enforcement action pertaining to the alleged violation of PSD
Submit a formal PSD application, including, but not limited to, BACT analysis and a schedule for the construction and implementation of BACT	No later than any schedule established pursuant to resolution of the pending enforcement action pertaining to the alleged violation of PSD
Achieve full compliance with the requirements of PSD following issuance of the requisite permit(s)	No later than any schedule established pursuant to resolution of the pending enforcement action pertaining to the alleged violation of PSD

- c. Submittal of Progress Reports

A Progress Report shall be submitted every six months, beginning six months from the date of issuance of this permit and ending upon the achievement of compliance. The Progress Report shall contain at least the following:

- i. The required timeframe for achieving the milestones in the schedule for compliance, and actual dates when such milestones were achieved.
 - ii. An explanation of why any required timeframe in the schedule of compliance was not met, and any preventive or corrective measures adopted.
- d. The Permittee shall, if needed, apply for revision of this permit to address the resolution of any such outstanding issue (e.g., include a new compliance

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

schedule, identify appropriate applicable
requirements, establish new requirements).

7.14 Unit 290: Carbon Disulfide Tank
 Control: CS₂ Recovery System, Flare

7.14.1 Description

This storage tank is used for the storage of carbon disulfide (a HAP), which is used as a reactant in the Unit 290 processes. Carbon disulfide emissions are controlled by a CS₂ recovery system and the Unit 266 flare. When the Unit 290 processes are not in operation, the tank vents directly to the flare.

7.14.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0125	Carbon Disulfide Storage Tank (30,000 Gallons)	CS ₂ Recovery System, Flare 36-0011

7.14.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 290 carbon disulfide storage tank" for the purpose of these unit-specific conditions, are storage tanks used in Unit 290 with a storage capacity of less than 40,000 gallons, as listed in Condition 7.14.2.
- b. The affected Unit 290 carbon disulfide storage tank is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 290 carbon disulfide storage tank is subject to the requirements of 35 IAC 219.122(b) because the storage tank has a storage capacity greater than 946 liters (250 gallons).
- d. The affected Unit 290 carbon disulfide storage tank is subject to 40 CFR 60 Subpart Kb because construction date of this tank is after the applicability date of July 23, 1984 and the capacity of each tank is greater than 40 m³ (approximately 10,567 gallons). The Illinois EPA is administering these standards in Illinois on behalf of the USEPA under a delegation agreement.

- e. The affected Unit 290 carbon disulfide storage tank is subject to 35 IAC 214 Subpart O, which provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:
 - i. Said flares are operative on existing batch type processes [35 IAC 214.383(a)]; and
 - ii. The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period (230 kg/hr and 1590 kg/8 hrs) [35 IAC 214.383(c)]; and
 - iii. Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls [35 IAC 214.383(d)].
- f. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of a flare, the Permittee is authorized to continue operation of the affected Unit 290 carbon disulfide storage tank in violation of the applicable requirements of 35 IAC 219.301, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 290 carbon disulfide storage tank from service as soon as practicable.
- ii. Material may not be transferred in or out of the affected Unit 290 carbon disulfide storage tank for the purpose of new manufacturing batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.14.9(b) and 7.14.10(a).

7.14.4 Non-Applicability of Regulations of Concern

- a. The affected Unit 290 carbon disulfide storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because the storage tank either has a capacity of less than 40,000 gallons or stores a liquid with a maximum true pressure of less than 0.5 psia.
- b. This permit is issued based on the affected Unit 290 carbon disulfide storage tank not being subject to 35 IAC 214.301 because of the exemption in 35 IAC 214.383 (see also Condition 7.14.3(e)).
- c. This permit is issued based on each affected Unit 290 carbon disulfide storage tank not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because each affected Unit 290 carbon disulfide storage tank either does not use an add-on control device to achieve compliance with an emission limitation or standard or does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.14.5 Control Requirements

- a. Tank 35-0125 shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3 °K (70 °F) [35 IAC 219.122(b) and (c)].
- b. Tank 35-0125 shall be equipped with a closed vent system and control device meeting the following specifications:
 - i. The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above

background and visual inspections, as determined in 40 CFR 60.485(b) [40 CFR 60.112b(a) (3) (i)].

- ii. The control device shall be designed and operated to reduce inlet VOC emissions by 95 percent or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements of the General Provisions (40 CFR 60.18, see also Condition 5.4.4) [40 CFR 60.112b(a) (3) (ii) and 61.113b(d)].
 - iii. The carbon disulfide recovery system shall consist of two condensers in series. The first condenser, No. 17-220, shall use glycol or chilled water as a coolant with a maximum inlet temperature of 40 °F. The second condenser, No. 17-735, shall use a coolant with a maximum shell temperature of -35 °F. The discharge from this condenser shall be vented to an existing scrubber/flare to provide an overall efficiency greater than 95% removal and destruction of carbon disulfide. If the Unit 290 process is not operating, the tanks may bypass the condensers and vent directly to the flare. This condition was established in Permit 94110112.
- c. At all times, the Permittee shall, to the extent practicable, maintain and operate Tank 35-0125 and associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions [40 CFR 60.11(d)].
 - d. Vapor pressure of any materials stored in this storage tank shall not exceed 9.0 psia. This limit was established in Permit 94110112.

7.14.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 290 carbon disulfide storage tank is subject to the following:

- a. Emissions from Tank 35-0125 controlled by the recovery system and flare shall not exceed the following limits:

<u>Scenario</u>	VOM Emissions (Carbon Disulfide)	
	<u>(Ton/Month)</u>	<u>(Ton/Year)</u>
Controlled	---	0.001
Uncontrolled	0.1	0.7

These limits are based on the vapor pressure limit in Condition 7.14.5, maximum emissions estimates using calculation procedures in Condition 7.14.12, and control device requirements in Condition 7.14.5.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 94110112, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.14.7 Testing Requirements

None

7.14.8 Monitoring Requirements

The owner or operator shall operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Illinois EPA in accordance with 40 CFR 60.113(c)(1), unless the plan was modified by the Illinois EPA during the review process. In this case, the modified plan applies [40 CFR 60.113(c)(2)].

7.14.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected Unit 290 carbon disulfide storage tank to demonstrate compliance with Conditions 5.5.1, 7.14.5, and 7.14.6, pursuant to Section 39.5(7)(b) of the Act:

a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 290 carbon disulfide storage tank subject to 35 IAC 219.301 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 290 carbon disulfide storage tank removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;
- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
- vi. The amount of release above typical emissions during malfunction/breakdown.

b. The owner or operator shall keep the following records:

- i. A copy of the operating plan [40 CFR 60.115b(c) (1)]; and
- ii. A record of the measured values of the parameters monitored in accordance with 60.113b(c) (2) (see also Condition 7.14.8) [40 CFR 60.115b(c) (2)].

c. The owner or operator shall keep records of all periods during which the pilot flame for the flare controlling Tank 35-0125 is absent [40 CFR 60.115b(d) (2)].

d. The Permittee shall maintain records of the following items for each affected Unit 290 carbon disulfide storage tank. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.

- i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and
 - ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f) and 40 CFR 60.116b(b)].
- e. The Permittee shall maintain, the identification and properties of each organic liquid stored at the source, as related to emissions, i.e., vapor pressure and molecular weight.
- f. The Permittee shall maintain records of the following items on an annual basis:
- i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid stored, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.14.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 290 carbon disulfide storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 290 carbon disulfide storage tank subject to Condition 7.14.3(f) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no

later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.

- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected Unit 290 carbon disulfide storage tank was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the affected Unit 290 carbon disulfide storage tank was taken out of service.
 - iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the affected Unit 290 carbon disulfide storage tank will be taken out of service.
- b. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 290 carbon disulfide storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
 - c. Semiannual reports of all periods recorded under 40 CFR 60.115b(d)(2) (see also Condition 7.14.9(c)) in which the pilot flame was absent shall be furnished to the Illinois EPA [40 CFR 60.115b(d)(3)].

- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.14.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.14.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.14.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.14.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.14.9 and 7.14.10.
- b. Available data on the storage temperature may be used to determine the maximum true vapor pressure as specified in 40 CFR 60.116b(e).
- c. Emissions from the affected Unit 290 carbon disulfide storage tank shall be determined by the recordkeeping requirements in Condition 7.14.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.15 Unit 290: Wastewater Hold Tank
 Control: Carbon Drums

7.15.1 Description

In the wastewater hold tank, bleach is used to neutralize the thiadiazole wastewater. Carbon drums are used for odor control.

7.15.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0300	Wastewater Hold Tank	Carbon Drums

7.15.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 290 wastewater tank" for the purpose of these unit-specific conditions, is an emission unit used to treat wastewater, as listed in Condition 7.15.2.
- b. The affected Unit 290 wastewater tank is subject to 35 IAC 219, Subpart G, Use of Organic Material, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].

7.15.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 290 wastewater tank not being subject to 35 IAC Part 219, Subpart V: Batch Operations, because the affected Unit 290 wastewater tank is not a chemical manufacturing batch operation.
- b. This permit is issued based on the affected Unit 290 wastewater tank not being subject to 35 IAC Part 219, Subpart B: Storage and Loading Operations, because the affected Unit 290 wastewater tank is not a storage tank.

- c. This permit is issued based on the affected Unit 290 wastewater tank not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 290 wastewater tank does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using this emission unit.
- d. This permit is issued based on the affected 290 wastewater tank not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected 290 wastewater tank does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.15.5 Operational And Production Limits And Work Practices

The number of batches shall not exceed 400 per year. This limit was established in Permit 96020087.

7.15.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 290 wastewater tank is subject to the following:

- a. VOM emissions from the affected Unit 290 wastewater tank shall not exceed 0.03 ton/year. This limit is based on the operating limit in Condition 7.15.5 and the calculation procedures in Condition 7.15.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 96020087, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.15.7 Testing Requirements

None

7.15.8 Monitoring Requirements

None

7.15.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 290 wastewater tank to demonstrate compliance with Conditions 5.5.1 and 7.15.6, pursuant to Section 39.5(7)(b) of the Act:

- a. Number of batches;
- b. Carbon drum changes; and
- c. The VOM emissions attributable to each organic liquid, tons/year, with supporting calculations.

7.15.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the affected Unit 290 wastewater tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM or operation in excess of the limits specified in Conditions 7.15.5 or 7.15.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.15.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.15.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.15.9 and a controlled emission factor of 0.15 lb/batch.

7.16 Unit 267: Batch Reactor Trains
 Control: Condensers, Scrubbers, Flare, Carbon Adsorbers

7.16.1 Description

In the Unit 267 Process, various lubricating oil products (including rust inhibitors, wear inhibitors, friction reducing additives, pour point depressants, antioxidants, and gear blends) or their intermediates are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, and a flare. In addition, carbon adsorbers are used for odor control.

7.16.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0119	Reactor	Condensers, Scrubbers, Flare 36-0011
27-0117	Reactor	
27-0118	Reactor	
27-0121	Antioxidant Reactor	Scrubbers, Flare 36-0011
27-0125	Gear Lube Blend Reactor	Carbon Adsorbers 33-0125-1 and 33-0125-2

7.16.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 267 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of lubricating oil products and intermediates, as listed in Condition 7.16.2.
- b. The affected Unit 267 reactor systems shall comply with 35 IAC 219, Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.16.3(b) (ii) below) and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].

- ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.16.3(b)(i) above) are allowable if such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].

- c. The affected Unit 267 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].

- d. The affected Unit 267 reactor systems are subject to 35 IAC 214 Subpart O, which provides that 35 IAC 214.301 shall not apply to existing hydrogen sulfide flares at a chemical manufacturing plant provided:
 - i. Said flares are operative on existing batch type processes [35 IAC 214.383(a)]; and
 - ii. The emission of sulfur dioxide into the atmosphere from said flares does not exceed 500 pounds per hour and 3500 pounds per eight-hour period (230 kg/hr and 1590 kg/8 hrs) [35 IAC 214.383(c)]; and

iii. Provided, however, that if emission controls for said flares become economically reasonable and technically feasible the owner/operator of such hydrogen sulfide flares shall install such controls [35 IAC 214.383(d)].

e. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare, the Permittee is authorized to continue operation of the affected Unit 267 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 267 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.16.9(a) and 7.16.10(a).
- iv. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.16.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 267 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

- b. This permit is issued based on the affected Unit 267 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 267 reactor systems not being subject to 35 IAC 214.301 because of the exemption in 35 IAC 214.383 (see also Condition 7.16.3(d)).
- d. This permit is issued based on the affected Unit 267 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 267 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.16.5 Control Requirements

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working

condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.

- d. Operation of Reactors 27-0117 and 27-0118 shall not exceed the following limits:

<u>Product</u>	<u>Operating Rate</u>
Thiadiazole	7,045 hours/year
Antiwear Product	3,888 hours/year
Friction Reducing Agent	1,893 hours/year
Pour Point Depressant	8,064 hours/year
HiTEC 7134 (or Equivalent Oil)	239 batches/year

These limits were established in Permits 73021389, 95110127, and 01100043 [T1].

- e. The Permittee shall replace the primary drum of the carbon adsorption unit with either a secondary drum or a new carbon drum every three months. This requirement was established in Permit 72100243.

7.16.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 267 reactor systems are subject to the following:

- a. VOM emissions from the affected Unit 267 reactor systems shall each not exceed the following limits:

<u>Equipment</u>	<u>VOM Emissions</u>	
	<u>(Lb/Batch)</u>	<u>(Ton/Year)</u>
Reactor 27-0125	0.33	0.22

These limits are based on control by a dual carbon adsorption unit and a flare and negligible emission rates.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations contain revisions to previously issued Permit 88100040. The source has requested that the Illinois EPA establish conditions in this permit that allow various refinements from the

conditions of this aforementioned permit, consistent with the information provided in the CAAPP application. The source has requested these revisions and has addressed the applicability and compliance of Title I of the CAA, specifically 35 IAC Part 203, Major Stationary Sources Construction and Modification. These limits continue to ensure that the construction and/or modification addressed in this permit does not constitute a new major source or major modification pursuant to these rules. These limits are the primary enforcement mechanism for the equipment and activities permitted in this permit and the information in the CAAPP application contains the most current and accurate information for the source. Specifically, the short term limit was changed from an hourly basis to a batch basis [T1R].

- b. VOM emissions from Reactor 27-0117 shall not exceed 0.01 ton per year when producing HiTEC 7134 (or equivalent oil). These limits are based on control by a flare and negligible emission rates.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 01100043, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- c. NO_x emissions from Reactor 27-0117 shall each not exceed 127.5 pounds per batch and 1.44 tons per year when producing HiTEC 7134 (or equivalent oil). These limits are based on the maximum emissions estimates using calculation procedures in Condition 7.16.12

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations contain revisions to previously issued Permit 01100043. The source has requested that the Illinois EPA establish conditions in this

permit that allow various refinements from the conditions of this aforementioned permit, consistent with the information provided in the CAAPP application. The source has requested these revisions and has addressed the applicability and compliance of Title I of the CAA, specifically 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits continue to ensure that the construction and/or modification addressed in this permit does not constitute a new major source or major modification pursuant to these rules. These limits are the primary enforcement mechanism for the equipment and activities permitted in this permit and the information in the CAAPP application contains the most current and accurate information for the source. Specifically, the short term limit was changed from an hourly basis to a batch basis [T1R].

7.16.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
- b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].
- c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in 35 IAC 219.501 [35 IAC 219.503(f)]:
 - i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];
 - ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken

continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f)(2)]; and

- iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f)(3)];
 - A. The sampling time for each run shall be as follows:
 - 1. For batch cycles less than eight hours in length, readings shall be taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.
 - 2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC 219.503(f)(3)(A)(i) (see also subsection (d)(iii)(A)(1) of this Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection (d)(iii)(A)(1) of this Condition. For each emission event

of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d)(iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d)(ii) of this Condition), then such event is not an emission event for purposes of this Condition;

- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle;
 - C. The mass emission rate from the control device outlet shall be obtained by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and
 - D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.
- d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].
 - e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].

- f. Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503 (see also Conditions 7.16.7(a) through (e)). The flare shall comply with the requirements of 40 CFR 60.18, as required by Condition 7.16.5(e) [35 IAC 219.503(b) and (c)].

7.16.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b)].

7.16.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 267 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.16.5 through 7.16.8, pursuant to Section 39.5(7)(b) of the Act:

- a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 267 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 267 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;

- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
 - vi. The amount of release above typical emissions during malfunction/breakdown.
- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.16.8 (see 35 IAC 219.504).
- i. Continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c)(2)].
- c. Records addressing use of good operating practices for the emissions control devices:
- i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c)(1) or (c)(2) (for example, Reactor 27-0125), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with

35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].

- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation of the carbon adsorption drums, including:
 - i. Date of replacement of carbon drums;
 - ii. Reason for replacement of carbon drums; and
 - iii. Quantity of carbon replaced.
- g. Records of operation and emissions of the affected Unit 267 reactor systems:
 - i. Quantity of batches produced (batches/month and batches/year);
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.16.12;
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;

- iv. VOM emissions in units specified by the emission limits in Condition 7.16.6 (lb/month and ton/year);
- v. The aggregate annual VOM and NO_x emissions from the affected unit 267 reactor systems, with supporting calculations; and
- vi. Operating rate for each product manufactured in Reactors 27-0117 and 27-0118 (hour/year or batches/year).

7.16.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 267 reactor system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 267 reactor systems subject to Condition 7.16.3(e) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 267 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were

completed or when the Unit 267 reactor systems were taken out of service.

- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the Unit 267 reactor systems will be taken out of service.
- b.
 - i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.16.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].
 - ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].
 - c. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.16.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.

- i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.
- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions or operation in excess of the limits specified in Conditions 7.16.5 or 7.16.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.16.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 266 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.16.5 and 7.16.6.

7.16.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.16.5 and the testing requirements of Condition 7.16.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.16.8, 7.16.9, and 7.16.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.16.9(g) and a NO_x emission factor of 2.4 lb NO_x/lb ammonia. These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.16.8.

7.17 Unit 267: Storage Tanks
 Control: Carbon Drums

7.17.1 Description

These storage tanks are used for the storage of xylene and dicyclopentadiene, which are used as reactants in Unit 267. Carbon drums are used for odor control on the xylene storage tank.

7.17.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0006	Xylene Storage Tank (8,800 Gallons)	None
35-0190	Dicyclopentadiene Storage Tank (10,000 Gallons)	Carbon Drums

7.17.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 267 storage tank" for the purpose of these unit-specific conditions, is a storage tank used in Unit 267 with a storage capacity of less than 40,000 gallons, as listed in Conditions 7.17.1 and 7.17.2.
- b. The affected Unit 267 storage tank is subject to 35 IAC 219.301, which specifies that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 267 storage tank is subject to the requirements of 35 IAC 219.122(b) because the affected Unit 267 storage tank has a storage capacity greater than 946 liters (250 gallons).

7.17.4 Non-Applicability of Regulations of Concern

- a. Each affected Unit 267 storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because each storage tank has a capacity of less than 40,000 gallons.

- b. Each affected Unit 267 storage tank is not subject to the requirements of 40 CFR 60, Subpart Kb because each storage tank has a storage capacity less than 40 m³ (approximately 10,567 gallons).
- c. This permit is issued based on the affected Unit 267 storage tanks not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 267 storage tanks either do not use an add-on control device to achieve compliance with an emission limitation or standard or does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.17.5 Control Requirements

The affected Unit 267 storage tanks shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3°K (70°F) [35 IAC 219.122(b) and (c)].

7.17.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 267 storage tank is subject to the following:

- a. Combined VOM emissions from storage tanks 35-0006 and 35-0190 shall not exceed 0.2 pound per hour and 0.88 ton per year. This limit is based on the maximum emissions estimates using calculation procedures in Condition 7.17.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 73021389, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification

addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.17.7 Testing Requirements

None

7.17.8 Monitoring Requirements

None

7.17.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 267 storage tank to demonstrate compliance with Conditions 5.5.1, 7.17.5, and 7.17.6, pursuant to Section 39.5(7) (b) of the Act:

- a. The Permittee shall maintain records of the following items for the affected Unit 267 storage tanks. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.
 - i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and
 - ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f)].
- b. The Permittee shall maintain, the identification and properties of each organic liquid stored as related to emissions, i.e., vapor pressure and molecular weight.
- c. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and

- ii. The VOM emissions attributable to each organic liquid, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.17.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 267 storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 267 storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
- b. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.17.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.17.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.17.12 Compliance Procedures

- a. Compliance with the requirements in Condition 7.17.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.17.9 and 7.17.12.
- b. Emissions from the affected Unit 267 storage tank shall be determined by the recordkeeping requirements in Condition 7.17.11. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.18 Unit 268: Batch Reactor Trains
Control: Condensers

7.18.1 Description

In the Unit 268 Process, various specialty lubricating oil blends, automatic transmission fluids, or intermediate reaction products are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers.

7.18.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0100	Specialty Blend Reactor	None
27-0200	Specialty Blend Reactor	None
27-0300	Specialty Blend Reactor	None
27-0450	Preblend Reactor	Condensers

7.18.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 268 reactor systems" for the purpose of these unit-specific conditions, are an emission unit used in the production of lubricating oil products and intermediates, as listed in Condition 7.18.2.
- b. The affected Unit 268 reactor systems are subject to 35 IAC 219, Subpart G, Use of Organic Material, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 268 reactor systems are subject to 35 IAC 219 Subpart V: Batch Operations, because this source has SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below.
 - i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual

determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and

- ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].

7.18.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 268 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- b. This permit is issued based on the affected Unit 268 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 268 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 268 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.18.5 Control Requirements And Operational And Production Limits

- a. The Permittee shall follow good operating practices for the affected Unit 268 reactor systems, including periodic inspection, routine maintenance and prompt

repair of defects. Good operating practices may include equipment manufacturer recommendations or practices common to the batch chemical manufacturing industry. At all times the Permittee shall, to the extent practicable, maintain and operate the equipment, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

- b. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- c. In the event that the operation of this source results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, change in raw material or installation of controls, in order to eliminate the nuisance.

7.18.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 268 reactor systems are subject to the following:

- a. VOM emissions from the ATF process (Reactor 27-0450) shall not exceed 1.2 tons per month and 4.0 tons per year. These limits are based on material balance calculations.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 99050081, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.18.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
 - b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].
 - c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in 35 IAC 219.501 [35 IAC 219.503(f)]:
 - i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];
 - ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f)(2)]; and
 - iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f)(3)];
- A. The sampling time for each run shall be as follows:
1. For batch cycles less than eight hours in length, readings shall be taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals

between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.

2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC 219.503(f)(3)(A)(i) (see also subsection (d)(iii)(A)(1) of this Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection (d)(iii)(A)(1) of this Condition. For each emission event of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process

knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d) (iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d) (ii) of this Condition), then such event is not an emission event for purposes of this Condition;

- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d) (i) of this Condition) throughout the batch cycle;

- C. The mass emission rate from the control device outlet shall be obtained by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and
 - D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.
- d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].
 - e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].

7.18.8 Monitoring Requirements

- a. Every owner or operator using a condenser to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:
 - i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius [35 IAC 219.504(d)(1)]; or

- ii. A VOM monitoring device used to indicate the concentration of VOM exiting the control device based on a detection principle such as infra-red photoionization, or thermal conductivity, each equipped with a continuous recorder [35 IAC 219.504(d) (2)].

7.18.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 268 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.18.5 through 7.18.8, pursuant to Section 39.5(7) (b) of the Act:

- a. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.18.7, which include the following [Section 39.5(7) (e) of the Act]:
 - i. The date, place and time of sampling or measurements;
 - ii. The date(s) analyses were performed;
 - iii. The company or entity that performed the analyses;
 - iv. The analytical techniques or methods used;
 - v. The results of such analyses; and
 - vi. The operating conditions as existing at the time of sampling or measurement.
- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under 35 IAC 219.504 (see also Condition 7.18.8).

For a condenser, the average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally [35 IAC 219.505(c) (3) (B)]; or

- ii. As an alternative to Condition 7.18.9(c) (i), at a minimum, records indicating the concentration level or reading indicated by the VOM monitoring device at the outlet of the scrubber, condenser, or carbon absorber, measured continuously and averaged over the same time period as the performance test (while the vent stream is routed normally) [35 IAC 219.505(c) (3) (D)].
- c. Records addressing use of good operating practices for the Condenser (17-0637):
 - i. Records for periodic inspection of the condensers with date, individual performing the inspection, and nature of inspection; and
 - ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c) (1) or (c) (2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].
- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b) (3) or (d) shall keep the following records:
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b) (1)].

- ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 268 reactor systems:
 - i. Quantity of batches produced (batches/month and batches/year);
 - ii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - iii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.18.12;
 - iv. VOM emissions in units specified by the emission limits in Condition 7.18.6 (ton/month and ton/year); and
 - v. The aggregate annual VOM emissions from the affected unit 268 reactor systems, with supporting calculations.

7.18.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the affected Unit 268 reactor systems with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.18.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].
- ii. The owner or operator of a de minimis single unit operation or batch process train exempt

from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].

- b. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.18.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.
- c. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM or operation in excess of the limits specified in Conditions 7.18.5 or 7.18.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.18.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 268 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.18.5 and 7.18.6.

7.18.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.18.5 and the testing requirements of Condition 7.18.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.18.8, 7.18.9, and 7.18.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.18.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.18.8.

7.19 Unit 270: Batch Reactor Trains
Control: Condensers, Scrubbers, Flare

7.19.1 Description

In the Unit 270 Process, various lubricating oil products (including calcium sulfonates, barium sulfonates, and antioxidants) or their intermediates are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers, scrubbers, direct contact condensers (DCC), and a flare.

7.19.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0401	Metallizer Reactor	Condenser 17-0409, DCC 05-0416
27-0402	Metallizer Reactor	Condenser 17-0410, DCC 05-0417
27-0900	Metallizer Reactor	Condenser 17-0905, DCC 05-0908
501	Methanol Still Column	Condenser 17-0502, Condenser 17-0611
27-0403	Metallizer Reactor	Condenser 17-0411, Scrubber 05-0418
27-0205	Reactor	Condenser, Scrubber, Flare 36-0219
27-0206	Reactor	
21-0522	Air Stripper	None
21-0523	Air Stripper	None

7.19.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 270 reactor systems" for the purpose of these unit-specific conditions, are batch emission units used in the production of lubricating oil products and intermediates, as listed in Condition 7.19.2.
- b. The affected Unit 270 reactor systems shall comply with 35 IAC 219, Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 (see Condition 7.19.3(b) (ii) below) and the following exception: If no odor nuisance

- exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
- ii. Emissions of organic material in excess of those permitted by 35 IAC 219.301 (see Condition 7.19.3(b)(i) above) are allowable if such emissions are controlled by one of the methods listed in 35 IAC 219.302(a) or (b) [35 IAC 219.302].
- c. The affected Unit 270 reactor systems are subject to 35 IAC 219 Subpart V, Batch Operations and Air Oxidation Processes, because this source has a SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each emission unit is included in category (i) or (ii) below:
- i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].
- d. The affected Unit 270 reactor systems are subject to 35 IAC 214 Subpart K, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2,000 ppm [35 IAC 214.301].
- e. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the flare, the Permittee is authorized to continue operation of the affected Unit 270 reactor systems in violation of the applicable requirement of 35 IAC 219.501, as necessary to prevent risk of injury to

personnel or severe damage to equipment. This authorization is subject to the following requirements:

- i. The Permittee shall repair the damaged feature(s) of the flare or remove the affected Unit 270 reactor systems from service as soon as practicable.
- ii. The Permittee may not initiate any new batches during malfunction or breakdown of the flare.
- iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.19.9(a) and 7.19.10(a).
- iv. For the purpose of this condition, a batch is defined as a complete cycle of a non-continuous operation, in which discrete quantities of raw materials are added to a reactor or vessel and undergo one or more reactions or separations to produce an intermediate or final product. A batch is completed when the product is removed from the reactor or vessel.

7.19.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the air strippers not being subject to the requirements of 40 CFR 61, Subpart FF, National Emission Standard for Benzene Waste Operations, because the air strippers are included in the exemption in 40 CFR 61.342(c)(3)(ii). The total annual benzene quantity in all waste streams chosen for exemption does not exceed 2.0 Mg/yr (2.2 ton/yr) as determined in the procedures in 40 CFR 61.355(j). The source-wide reporting requirement for this exemption is in Condition 5.7.4(c)(i) of this permit.
- b. This permit is issued based on the affected Unit 270 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].
- c. This permit is issued based on the affected Unit 270 reactor systems not being subject to 35 IAC 219

Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].

- d. This permit is issued based on the affected Unit 270 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 270 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.19.5 Control Requirements

- a. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- b. The flare shall comply with the requirements of 40 CFR 60.18 (see also Condition 5.4.4). The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to 35 IAC 219, Subpart V, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 35 IAC 219, Subpart V to not comply with one or more of the provisions of 40 CFR 60.18 [35 IAC 219.501(e)].
- c. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.

7.19.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 270 reactor systems are subject to the following:

- a. VOM emissions from the reactors shall not exceed the following:

<u>Equipment</u>	<u>VOM Emissions</u>	
	<u>(Lb/Hour)</u>	<u>(Ton/Year)</u>
Reactors 27-0401, 27-0402, and 27-0403	129.3	566.3
Reactor 27-0900	86.2	377.6

These limits are based on the maximum emissions estimates using calculation procedures in Condition 7.19.12.

Compliance with the hourly limit shall be determined per batch, by averaging the VOM emissions over the entire batch. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 85060020, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- b. HAP emissions from the Reactors 24-0401, 24-0402, and 27-0900 shall not exceed the following:

<u>Pollutant</u>	<u>HAP Emissions</u>	
	<u>(Lb/Hour)</u>	<u>(Ton/Year)</u>
Hexane	104.2	375
Methanol	104.2	375

These limits are based on the maximum production rate and a site-specific emission factor developed from a stack test conducted at the source.

Compliance with the hourly limit shall be determined per batch, by averaging the VOM emissions over the

entire batch. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 72121045, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- c. Emissions of benzene, 2-ethylhexanol, and all other organic materials combined from the air strippers shall not exceed 1.2 lb/hr, 33.6 lb/week, and 0.8 ton/year. These limits are based on negligible emission rates.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 95030095, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.19.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
- b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].
- c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction

efficiency requirement set forth in 35 IAC 219.501
[35 IAC 219.503(f)]:

- i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];
 - ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f)(2)]; and
 - iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f)(3)];
- A. The sampling time for each run shall be as follows:
1. For batch cycles less than eight hours in length, readings shall be taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.
 2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC 219.503(f)(3)(A)(i) (see also subsection (d)(iii)(A)(1) of this

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection (d) (iii) (A) (1) of this Condition. For each emission event of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d) (iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from

the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d)(ii) of this Condition), then such event is not an emission event for purposes of this Condition;

- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle;
 - C. The mass emission rate from the control device outlet shall be obtained by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and
 - D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.
- d. The owner or operator of a batch operation may propose an alternative test method or procedures to

demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].

- e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].
- f. Notwithstanding 35 IAC 219.503(a), a flare used to comply with control requirements of 35 IAC 219.501 shall be exempt from performance testing requirements in 35 IAC 219.503 (see also Conditions 7.19.7(a) through (e)). The flare shall comply with the requirements of 40 CFR 60.18, as required by Condition 7.19.5(e) [35 IAC 219.503(b) and (c)].

7.19.8 Monitoring Requirements

- a. Every owner or operator using an flare to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame [35 IAC 219.504(b)].
- b. Every owner or operator using a condenser to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:
 - i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius [35 IAC 219.504(d)(1)]; or
 - ii. A VOM monitoring device used to indicate the concentration of VOM exiting the control device based on a detection principle such as infra-red photoionization, or thermal conductivity, each equipped with a continuous recorder [35 IAC 219.504(d)(2)].

7.19.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 270 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.19.5 through 7.19.8, pursuant to Section 39.5(7) (b) of the Act:

a. Records for Malfunctions and Breakdowns of Flare

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the affected Unit 270 reactor systems subject to 35 IAC 219.501 during malfunctions and breakdown of the control features of the flare, which as a minimum, shall include:

- i. Date and duration of malfunction or breakdown;
- ii. A detailed explanation of the malfunction or breakdown;
- iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected Unit 270 reactor systems removed from service without risk of injury to personnel or severe damage to equipment;
- iv. The measures used to reduce the quantity of emissions and the duration of the event;
- v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and
- vi. The amount of release above typical emissions during malfunction/breakdown.

b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under Section 7.19.8 (see 35 IAC 219.504).

- i. If using any of the following as a control device, the following records:
 - A. Where a flare is used, continuous records of the flare pilot flame monitoring and

records of all periods of operations during which the pilot flame is absent [35 IAC 219.505(c) (2)].

- B. Where a condenser is used, the average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally [35 IAC 219.505(c) (3) (B)]; or
 - C. As an alternative to Condition 7.19.9(b) (i) (B), at a minimum, records indicating the concentration level or reading indicated by the VOM monitoring device at the outlet of the scrubber, condenser, or carbon absorber, measured continuously and averaged over the same time period as the performance test (while the vent stream is routed normally) [35 IAC 219.505(c) (3) (D)].
- c. Records addressing use of good operating practices for the emissions control devices:
- i. A log of operating time for the capture system, control device, monitoring equipment and the associated emission unit;
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - iii. Records for periodic inspection of the flare with date, individual performing the inspection, and nature of inspection; and
 - iv. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c) (1) or (c) (2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these

values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].

- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 270 reactor systems:
 - i. Quantity of batches produced (batches/month and batches/year);
 - ii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - iii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.19.12;
 - iv. VOM emissions in units specified by the emission limits in Condition 7.19.6 (lb/batch, ton/month, and ton/year); and
 - v. The aggregate annual VOM emissions from the affected unit 270 reactor systems, with supporting calculations.

7.19.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 270 reactor system with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. Reporting of Malfunctions and Breakdowns for Flare

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of the affected Unit 270 reactor systems subject to Condition 7.19.3(e) during malfunction or breakdown of the control features of the flare.

- i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction or breakdown.
- ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected unit 270 reactor systems was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the Unit 270 reactor systems were taken out of service.
- iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to

occur with schedule, and the expected date on which repairs will be complete or the Unit 270 reactor systems will be taken out of service.

- b. i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.19.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].
- ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].
- c. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.19.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.
- d. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM or operation in excess of the limits specified in Conditions

7.19.5 or 7.19.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.19.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 266 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.19.5 and 7.19.6.

7.19.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.19.5 and the testing requirements of Condition 7.19.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.19.8, 7.19.9, and 7.19.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.19.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.19.8.

7.20 Unit 270: Storage Tanks
 Control: Condenser

7.20.1 Description

These storage tanks are used for the storage of hexane and methanol, which are used as reactants in Unit 270. A condenser is used for control of VOM emissions from the storage tanks.

7.20.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
35-0608	Recovered Hexane Storage Tank (14,000 Gallons)	Condenser 17-0611
35-0609	Recovered Hexane Storage Tank (3,500 Gallons)	Condenser 17-0611
35-0607	Fresh Hexane Storage Tank (7,070 Gallons)	Condenser 17-0611
35-0612	Methanol Storage Tank (7,000 Gallons)	Condenser 17-0611
35-0116	Methanol Storage Tank (7,000 Gallons)	Condenser 17-0611
35-0503	Methanol Column Surge Tank (735 Gallons)	Condenser 17-0611
35-0631	Recovered Methanol Storage Tank (7,000 Gallons)	Condenser 17-0611
35-0632	Recovered Methanol Storage Tank (7,000 Gallons)	Condenser 17-0611
35-2113	Fresh Methanol Storage Tank (20,000 Gallons)	Condenser 17-0611
35-0610	Recovered Solvents Storage Tank (9,600 Gallons)	Condenser 17-0611

7.20.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 270 storage tank" for the purpose of these unit-specific conditions, is a storage tank used in Unit 270 with a storage capacity of less than 40,000 gallons, as listed in Conditions 7.20.1 and 7.20.2.
- b. The affected Unit 270 storage tank is subject to 35 IAC 219.301, which specifies that no person shall

cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: if no odor nuisance exists this limitation shall apply only to photochemically reactive material [35 IAC 219.301].

- c. The affected Unit 270 storage tank is subject to the requirements of 35 IAC 219.122(b) because the affected Unit 270 storage tank has a storage capacity greater than 946 liters (250 gallons).

7.20.4 Non-Applicability of Regulations of Concern

- a. Each affected Unit 270 storage tank is not subject to 35 IAC 219 Subpart B: Organic Emissions from Storage and Loading Operations (except 35 IAC 219.122(b) and 35 IAC 219.129(f)), because each storage tank has a capacity of less than 40,000 gallons.
- b. Tanks 35-0116, 0503, 0607, 0609, 0610, 0612, 0631, and 0632 are not subject to the requirements of 40 CFR 60, Subpart Kb because these storage tanks have a storage capacity less than 40 m³ (approximately 10,567 gallons).
- c. This permit is issued based on the affected Unit 270 storage tanks not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 270 storage tanks does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.20.5 Control Requirements

- a. The affected Unit 270 storage tanks shall be equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108, or unless such tank is a fitted with a recovery system as described in 35 IAC 219.121. If no odor nuisance exists the limitations of this condition shall only apply to the loading of VOL with a vapor pressure of 17.21 kPa (2.5 psia) or greater at 294.3°K (70°F) [35 IAC 219.122(b) and (c)].

- b. Condenser 17-0611 shall operate with a maximum outlet temperature of 45°F and a minimum control efficiency of 88%. These requirements were established in Permit 88020080.
- c. The throughput of Tank 35-0610 shall not exceed 16.5 million gallons per year and the vapor pressure of materials stored in Tank 35-0610 shall not exceed 1.5 psia. These requirements were established in Permit 88020080.

7.20.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 270 storage tanks are subject to the following:

- a. VOM emissions from the following storage tank vents controlled by Condenser 17-0611 shall not exceed the following limits:

<u>Storage Tanks</u>	<u>VOM Emissions</u>	<u>(Ton/Year)</u>
	<u>(Lb/Hr)</u>	
35-0116, 35-0607, 35-0608, 35-0611, 35-0612, 35-0631, 35-0632, and 35-2113	3.1	13.6

These limits are based on the maximum emissions estimates using calculation procedures in Condition 7.20.12.

Compliance with the hourly limit shall be determined per batch, by averaging the VOM emissions over the entire batch. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 85060020, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

- b. VOM emissions from Tank 35-0610 shall not exceed 0.70 ton/year. This limit is based on the throughput limit in Condition 7.20.5 and the maximum emissions

estimates using calculation procedures in Condition 7.20.12.

Compliance with the hourly limit shall be determined per batch, by averaging the VOM emissions over the entire batch. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 88020080, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.20.7 Testing Requirements

None

7.20.8 Monitoring Requirements

None

7.20.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 270 storage tanks to demonstrate compliance with Conditions 5.5.1, 7.20.5, and 7.20.6, pursuant to Section 39.5(7)(b) of the Act:

- a. The Permittee shall maintain records of the following items for the affected Unit 270 storage tanks. These records shall be kept up to date for each tank at the source and be retained until the tank is removed from the source.
 - i. Records indicating compliance with 35 IAC 219.122 (e.g., the presence of a submerged loading pipe); and
 - ii. The dimensions of the tank and an analysis of capacity [35 IAC 219.129(f)].

- b. The Permittee shall maintain, the identification and properties of each organic liquid as related to emissions, i.e., vapor pressure and molecular weight.
- c. The Permittee shall maintain records of the following items on an annual basis:
 - i. The throughput of each organic liquid through the tank, gallons; and
 - ii. The VOM emissions attributable to each organic liquid, tons/year, with supporting calculations, calculated utilizing an approved USEPA methodology, such as the current version of the TANKS program.

7.20.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 270 storage tank with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. Any loading of organic liquid with a true vapor pressure greater than or equal to 17.21 kPa (2.5 psia) in the affected Unit 270 storage tank without usage of a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance.
- b. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM in excess of the limits specified in Condition 7.20.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.20.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.20.12 Compliance Procedures

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

- a. Compliance with the requirements in Condition 7.20.5 shall be determined by the recordkeeping and reporting requirements in Condition 7.20.9 and 7.20.10.
- b. Emissions from the affected Unit 270 storage tank shall be determined by the recordkeeping requirements in Condition 7.20.9. Calculations may be based on the current version of the TANKS program or AP-42 emission factors.

7.21 Unit 270: Silos and Weigh Bins
 Control: Baghouses

7.21.1 Description

The silos and weigh bins are used for receiving, storage, and distribution of lime and filter aid for the overbased calcium sulfonate process.

7.21.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
41-0137	Lime Storage Silo	Baghouse 09-0136
41-0920	Lime Storage Silo	Baghouse 09-0920
41-0142	Lime Weigh Bin	Baghouse 09-0139
41-0924	Lime Weigh Bin	Baghouse 09-0924
41-0146	Filter Aid Weigh Bin	Baghouse 09-0147
41-0311	Filter Aid Weigh Bin	Baghouse 09-0311

7.21.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 270 material handling units" for the purpose of these unit-specific conditions, are emission units used for material handling operations in Unit 270, as listed in Conditions 7.21.1 and 7.21.2.
- b. The affected Unit 270 material handling units are subject to 35 IAC 212.322, which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.322 (See also Attachment 2) [35 IAC 212.322(a)].

7.21.4 Non-Applicability of Regulations of Concern

This permit is issued based on the affected Unit 270 material handling units not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected Unit 270 material handling units do not have potential pre-control device

emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.21.5 Control Requirements

The Permittee shall maintain and operate the associated control equipment (baghouses and filters), including periodic inspections, routine maintenance, repair of defects, and visual emission checks, to demonstrate compliance with Condition 7.21.3(b).

7.21.6 Emission Limitations

There are no specific emission limitations for this unit, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.21.7 Testing Requirements

None

7.21.8 Monitoring Requirements

None

7.21.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 270 material handling units to demonstrate compliance with Conditions 5.5.1 and 7.21.5, pursuant to Section 39.5(7)(b) of the Act:

- a. Operating rate of the baghouses (dscf per minute and minutes per year);
- b. Records of maintenance of the baghouses, including periodic inspections, routine maintenance, repair of defects, and visual emission checks; and
- c. PM emissions, with supporting calculations (lb/year).

7.21.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 270 material handling unit with the permit requirements, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

7.21.11 Operational Flexibility/Anticipated Operating Scenarios

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

N/A

7.21.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.21.9 and a controlled emission factor of 0.04 gr/dscf.

7.22 Unit 275: Batch Reactor Trains
 Control: Condensers, Scrubbers

7.22.1 Description

In the Unit 275 Process, various lubricating oil products (including ashless dispersants and boronated dispersants) or their intermediates are manufactured in reactors in a batch process. VOM and HAP emissions from the reactors and associated tanks are controlled by various condensers and scrubbers.

7.22.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
27-0201	PBSA Reactor	Condenser 17-0214
27-0211	PBSA Reactor	Condenser 17-0214
27-0216	Chlorinator Reactor	Condenser 17-0218, Scrubber 33-0220
27-0501	Neutralizer Reactor	Condenser 17-0502,
27-0511	Neutralizer Reactor	Condenser 17-0512
27-0531	Reactor	Condenser 17-0535, Condenser 17-0532

7.22.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 275 reactor systems" for the purpose of these unit-specific conditions, are an emission unit used in the production of lubricating oil products and intermediates, as listed in Condition 7.22.2.
- b. The affected Unit 275 reactor systems are subject to 35 IAC 219, Subpart G, Use of Organic Material, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].
- c. The affected Unit 275 reactor systems are subject to the control requirements of 35 IAC 219 Subpart V: Batch Operations, because this source has SIC of 2821, 2833, 2834, 2861, 2865, 2869, or 2879, and each

emission unit is included in category (i) or (ii) below.

- i. Any single unit operation with uncontrolled total annual mass emissions that exceed 500 lb/yr and with a VOM concentration greater than 500 ppmv. In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOM concentration of less than or equal to 500 ppmv [35 IAC 219.500(d)(1)]; and
 - ii. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of 30,000 lb/yr or more of VOM from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding 500 lb/yr, regardless of VOM concentration, shall be included in the aggregate applicability analysis [35 IAC 219.500(d)(2)].
- d. The affected Unit 275 reactor systems are subject to 35 IAC 212.322, which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.322 (See also Attachment 2) [35 IAC 212.322(a)].

7.22.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 275 reactor systems not being subject to 35 IAC 219 Subpart Q, Synthetic Organic Chemical and Polymer Manufacturing Plant, because these regulations do not apply to any reactor that is designed and operated as a batch operation [35 IAC 219.431(b)(2)].

- b. This permit is issued based on the affected Unit 275 reactor systems not being subject to 35 IAC 219 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes, because the requirements of Subpart RR do not apply to a source's miscellaneous organic chemical manufacturing process emission units which are included within the categories specified in 35 IAC 219 Subparts Q or V [35 IAC 219.960(a)].
- c. This permit is issued based on the affected Unit 275 reactor systems not being subject to 40 CFR Part 63, Subparts F through H, because the affected Unit 275 reactor systems does not produce, as a primary product, one of the chemicals listed in Table 1 of 40 CFR 63, Subpart F. This determination was made as of the date issued on this permit and does not shield the Permittee if these chemicals are produced using these emission units.

7.22.5 Control Requirements And Operational And Production Limits

- a. The Permittee shall follow good operating practices for the affected Unit 275 reactor systems, including periodic inspection, routine maintenance and prompt repair of defects. Good operating practices may include equipment manufacturer recommendations or practices common to the batch chemical manufacturing industry. At all times the Permittee shall, to the extent practicable, maintain and operate the equipment, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.
- b. Except as provided for in 35 IAC 219.500(c), every owner or operator of a single unit operation with an average flow rate, as determined in accordance with 35 IAC 219.502(b), below the flow rate value calculated by the applicability equations contained in 35 IAC 219.500(e), shall reduce uncontrolled VOM emissions from such single unit operation by an overall efficiency, on average, of at least 90 percent, or 20 ppmv, per batch cycle [35 IAC 219.501(a)].
- c. In the event that the operation of this source results in an odor nuisance, the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, change in raw material

or installation of controls, in order to eliminate the nuisance.

- d. Operation of the Unit 275 reactor systems shall not exceed the following limits:

<u>Equipment</u>	<u>Production Rate</u>	
	<u>(Ton/Month)</u>	<u>(Ton/Year)</u>
Reactor 27-0531	2,500	25,000

These limits were established in Permit 98090069 [T1].

7.22.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected Unit 275 reactor systems are subject to the following:

- a. VOM emissions from the affected Unit 275 reactor systems shall not exceed the following limits:

<u>Equipment</u>	<u>VOM Emissions</u>	
	<u>(Ton/Month)</u>	<u>(Ton/Year)</u>
Reactor 27-0531	0.18	1.75
Reactor 27-0216	-	1.60

The limits on Reactor 27-0531 are based on the operating limits in Condition 7.22.5, an emission factor of 1,178.2 lb/million lb production, and a combined control efficiency of 94%. The emission limit represents a 1.31 ton per year increase over previously allowed levels. The limit on Reactor 27-0216 is based on a controlled emission rate of 0.73 lb/hour.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permits 92110026 and 98090069, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major

modification pursuant to Title I of the CAA,
specifically 35 IAC Part 203 [T1].

- b. Fugitive VOM emissions from the Superborate process shall not exceed 0.34 ton per year. This limit is based on the number of components for the Superborate process and a site-specific emission factor.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitation was established in Permit 93040038, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.22.7 Testing Requirements

- a. Upon the Illinois EPA's request, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with 35 IAC 219.501, in accordance with the applicable test methods and procedures specified in 35 IAC 219.503(d), (e), and (f) [35 IAC 219.503(a)].
- b. For the purpose of demonstrating compliance with the control requirements of 35 IAC 219.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 219.503(e)].
- c. The following methods in 40 CFR 60, Appendix A, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in 35 IAC 219.501 [35 IAC 219.503(f)]:
 - i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotometer. The control device inlet sampling site for determination of vent stream VOM composition reduction efficiency shall be prior to the control device and after the control device [35 IAC 219.503(f)(1)];

- ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe [35 IAC 219.503(f) (2)]; and
- iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet [35 IAC 219.503(f) (3)];
 - A. The sampling time for each run shall be as follows:
 - 1. For batch cycles less than eight hours in length, readings shall be taken continuously over the entire length of the batch cycle with a maximum of 15-minute intervals between measurements if using Method 25A. If using Method 18, readings shall be taken continuously with a maximum of 15-minute intervals between measurements throughout the batch cycle unless it becomes necessary to change the impinger train, in which case a 30-minute interval shall not be exceeded.
 - 2. For batch cycles of eight hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in 35 IAC 219.503(f) (3) (A) (i) (see also subsection (d) (iii) (A) (1) of this Condition) or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which define the emission profile of each emission event occurring within the batch cycle. For each emission event of less than four hours in duration, the owner or operator shall test continuously over the entire emission event as set forth in subsection

(d) (iii) (A) (1) of this Condition. For each emission event of greater than four hours in duration, the owner or operator shall elect either to perform a minimum of three one hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. To demonstrate that the portion of the emission event to be tested defines the emission profile for the emission event, the owner or operator electing to rely on this option shall develop an emission profile for the entire emission event. Such emission profile shall be based upon either process knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions.

3. For purposes of subsection (d) (iii) of this Condition, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOM will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

the batch cycle. If the flow rate measurement for any emission event is zero, in accordance with 35 IAC 219.503(f)(2) (see also subsection (d)(ii) of this Condition), then such event is not an emission event for purposes of this Condition;

- B. The mass emission rate from the process vent or inlet to the control device shall be determined by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle;
 - C. The mass emission rate from the control device outlet shall be obtained by combining concentration and flow rate measurements taken simultaneously at sampling sites selected in accordance with 35 IAC 219.503(f)(1) (see also subsection (d)(i) of this Condition) throughout the batch cycle; and
 - D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in 35 IAC 219.503(f)(3)(B) and (f)(3)(C) (see also subsections (d)(iii)(B) and (d)(iii)(C) of this Condition), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.
- d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in 35 IAC 219.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions [35 IAC 219.503(h)].
 - e. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this 35 IAC 219.503, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 219.503(i)].

7.22.8 Monitoring Requirements

- a. Every owner or operator using a condenser to comply with 35 IAC 219.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:
 - i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius [35 IAC 219.504(d)(1)]; or
 - ii. A VOM monitoring device used to indicate the concentration of VOM exiting the control device based on a detection principle such as infrared photoionization, or thermal conductivity, each equipped with a continuous recorder [35 IAC 219.504(d)(2)].

7.22.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 275 reactor systems to demonstrate compliance with Conditions 5.5.1 and 7.22.5 through 7.22.8, pursuant to Section 39.5(7)(b) of the Act:

- a. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.22.7, which include the following [Section 39.5(7)(e) of the Act]:
 - i. The date, place and time of sampling or measurements;
 - ii. The date(s) analyses were performed;
 - iii. The company or entity that performed the analyses;
 - iv. The analytical techniques or methods used;
 - v. The results of such analyses; and
 - vi. The operating conditions as existing at the time of sampling or measurement.

- b. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 219.501 shall keep records of the following parameters required to be monitored under 35 IAC 219.504 (see also Condition 7.22.8).
 - i. For a condenser, the average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally [35 IAC 219.505(c) (3) (B)]; or
 - ii. As an alternative to Condition 7.22.9(c) (i), at a minimum, records indicating the concentration level or reading indicated by the VOM monitoring device at the outlet of the scrubber, condenser, or carbon absorber, measured continuously and averaged over the same time period as the performance test (while the vent stream is routed normally) [35 IAC 219.505(c) (3) (D)].
- c. Records addressing use of good operating practices for the emissions control devices:
 - i. Records for periodic inspection of the condensers with date, individual performing the inspection, and nature of inspection; and
 - ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
- d. Every owner or operator of a de minimis single unit operation or batch process train exempt under 35 IAC 219.500(c) (1) or (c) (2), shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(a)].

- e. Every owner or operator of a single unit operation exempt under 35 IAC 219.500(b)(3) or (d) shall keep the following records:
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit [35 IAC 219.505(b)(1)].
 - ii. The average flow rate in scfm and documentation verifying this value [35 IAC 219.505(b)(2)].
- f. Records of operation and emissions of the affected Unit 275 reactor systems:
 - i. Quantity of batches produced (batches/month and batches/year);
 - ii. All the detailed data necessary to determine VOM emissions using the procedures specified in Section 7.22.12;
 - iii. The detailed record of material balance calculations or specific emission factor development including the stack test and process information for that specific emission factor;
 - iv. VOM emissions in units specified by the emission limits in Condition 7.22.6 (lb/month and ton/year); and
 - v. The aggregate annual VOM and PM emissions from the affected unit 275 reactor systems, with supporting calculations.

7.22.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the affected Unit 275 reactor systems with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. i. The owner or operator of a single unit operation claiming vent stream concentration exemption level, as set forth in 35 IAC 219.500(d)(1) (see also Condition 7.22.3(c)(i)), shall notify the Illinois EPA in writing if the vent stream concentration at any time reaches or exceeds 500 ppmv, within 60 days after such event. Such notification shall include a copy of all records of such event [35 IAC 219.505(d)].
- ii. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements due to 35 IAC 219.500(c) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions from such de minimis single unit operation or batch process train exceed the threshold of 500 lb/yr or 30,000 lb/yr, respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event [35 IAC 219.505(g)].
- b. Upon request by the Illinois EPA, the owner or operator of a batch operation which is exempt from the control requirements of 35 IAC 219.501 (see Condition 7.22.5(a)), shall submit records including the following to the Illinois EPA which will document that the batch operation is exempt from the control requirements.
 - i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculation, any measurements made in accordance with 35 IAC 219.503 and the total production as represented in this permit.
 - ii. The average flow rate in scfm and documentation verifying this value.
- c. The Permittee shall notify the Illinois EPA Compliance Section of emissions of VOM or operation in excess of the limits specified in Conditions 7.22.5 or 7.22.6 by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation.

7.22.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected unit 275 reactor system without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the Permittee's obligation to properly obtain a construction permit in a timely manner for any activity constituting construction or modification of the source, as defined in 35 IAC 201.102:

- a. Use of various raw materials is allowed, as long as such changes do not cause a violation of Conditions 7.22.5 and 7.22.6.

7.22.12 Compliance Procedures

- a. Compliance with the control requirements of Condition 7.22.5 and the testing requirements of Condition 7.22.7 shall be demonstrated through the inspection, monitoring, recordkeeping and reporting requirements of Conditions 7.22.8, 7.22.9, and 7.22.10.
- b. Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.22.9(f). These calculations shall use a control efficiency for the control equipment as determined by the most recent stack test during periods when the control equipment is in proper operation, according to the monitoring requirements in Condition 7.22.8.

7.23 Unit 275: Storage Silos and Weigh Bins
Control: Baghouses, Filter

7.23.1 Description

The weigh bins and silos are used for storage and distribution of filter aid and boric acid for the ashless dispersant processes.

7.23.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
41-0171	Filter Aid Storage Silo	Baghouse 09-0171
41-0172	Filter Aid Storage Silo	Baghouse 09-0172
41-0173	Filter Aid Weigh Bin	Baghouse 09-0173
41-0174	Filter Aid Weigh Bin	Baghouse 09-0174
41-0184	Boric Acid Storage Silo	Baghouse 09-0184
41-0187	Boric Acid Vacuum Receiver	Filter S-6
41-0176	Boric Acid Weigh Bin	Baghouse 09-0176

7.23.3 Applicability Provisions and Applicable Regulations

- a. The "affected Unit 275 material handling units" for the purpose of these unit-specific conditions, are emission units used for material handling operations in Unit 275, as listed in Conditions 7.23.1 and 7.23.2.
- b. The affected Unit 275 material handling units are subject to 35 IAC 212.321, which provides that:

No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 (See also Attachment 2) [35 IAC 212.321(a)].

7.23.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected Unit 275 material handling units not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major

Stationary Sources, because the affected Unit 275 material handling units do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.23.5 Control Requirements

The Permittee shall maintain and operate the associated control equipment (baghouses and filters), including periodic inspections, routine maintenance, repair of defects, and visual emission checks, to demonstrate compliance with Condition 7.23.3(b).

7.23.6 Emission Limitations

There are no specific emission limitations for this unit, however, there are source wide emission limitations in Condition 5.5 that include this unit.

7.23.7 Testing Requirements

None

7.23.8 Monitoring Requirements

None

7.23.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected Unit 275 material handling units to demonstrate compliance with Conditions 5.5.1 and 7.23.5, pursuant to Section 39.5(7)(b) of the Act:

- a. Operating rate of the baghouses (dscf per minute and minutes per year);
- b. Records of maintenance of the baghouses, including periodic inspections, routine maintenance, repair of defects, and visual emission checks; and
- c. PM emissions, with supporting calculations (lb/year).

7.23.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected Unit 275 material handling unit with the permit requirements,

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

7.23.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.23.12 Compliance Procedures

Compliance with the emission limits of this permit shall be determined by material balance equations using the records required by Condition 7.23.9 and a controlled emission factor of 0.04 gr/dscf.

7.24 Cooling Towers

7.24.1 Description

The cooling towers are used to cool water for use in the manufacturing processes. The water used does not have a measurable amount of VOM.

7.24.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
39-0955	Unit 270 Cooling Tower	None
39-0227	Unit 280 Cooling Tower	None

7.24.3 Applicability Provisions and Applicable Regulations

- a. The "affected cooling towers" for the purpose of these unit-specific conditions, are emission units used for cooling process water, as listed in Condition 7.24.2.
- b. The affected cooling towers are subject to 35 IAC 219, Subpart G, Use of Organic Material, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 219.302 and the following exception: If no odor nuisance exists the limitation of 35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].

7.24.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected cooling towers not being subject to 35 IAC 219 Subpart TT, because no limits of Subpart TT shall apply to emission units with emissions of VOM to the atmosphere less than or equal to 2.3 Mg (2.5 tons) per calendar year, if the total emissions from such emission units not complying with 35 IAC 219.986 does not exceed 4.5 Mg (5.0 tons) per calendar year [35 IAC 219.980(c)].
- b. This permit is issued based on the affected cooling towers not being subject to 40 CFR Part 63, Subpart Q, Industrial Cooling Towers, because the cooling towers are not operated with chromium-based water treatment chemicals.

- c. This permit is issued based on the affected cooling towers not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected cooling towers do not use an add-on control device to achieve compliance with an emission limitation or standard.

7.24.5 Control Requirements

None

7.24.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected cooling towers are subject to the following:

- a. VOM emissions from each affected cooling tower shall not exceed 1.1 tons per year. These limits are based on the design flow rate of the affected cooling towers and emission calculation procedures in Condition 7.24.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 93100090, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

7.24.7 Testing Requirements

The Permittee shall sample and analyze annually the water flow to each of the cooling towers for concentrations of VOM. This requirement was established in Permit 93100090.

7.24.8 Monitoring Requirements

None

7.24.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected cooling tower to demonstrate compliance with Conditions 5.5.1, 7.24.6, and 7.24.7, pursuant to Section 39.5(7)(b) of the Act:

- a. Records indicating the maximum pumping rate (gallons per minute) and actual pumping rate (gallons per month) for each affected cooling tower;
- b. Records of the sampling and analysis required by Condition 7.24.7; and
- c. Emissions of VOM from the affected cooling towers (tons/month and tons/year). This information for annual VOM emissions shall be included with the records required by Condition 5.6.2(e).

7.24.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected cooling tower with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. If there is an exceedance of the requirements of Condition 7.24.6 as determined by the records required by this permit, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois, within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.

7.24.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.24.12 Compliance Procedures

Compliance with the emission limits in Condition 7.24.6 shall be determined by the testing and recordkeeping

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

required by Conditions 7.24.7 and 7.24.9 and the following equation:

$$\text{VOM Emissions} = (\text{Flow Rate, gal}) * (0.7 \text{ lb}/10^6 \text{ gal}).$$

where $0.7 \text{ lb}/10^6 \text{ gal}$ is the emission factor for controlled cooling towers from Table 5.1-2, AP-42, Volume I, Fifth Edition, January 1995. "Controlled" means that leaks into the cooling water system are minimized and the cooling water is monitored for hydrocarbons.

7.25 Steam Boilers

7.25.1 Description

These natural gas fired boilers are used to produce steam for heat generation and process heating at the source. These boilers each have a maximum design heat input capacity of 99.7 mmBtu/hr and were constructed, modified, or reconstructed after June 9, 1989.

7.25.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
500-15-0110	99.7 mmBtu/hr Boiler	None
500-15-0210	99.7 mmBtu/hr Boiler	None
500-15-0310	99.7 mmBtu/hr Boiler	None

7.25.3 Applicability Provisions and Applicable Regulations

- a. An "affected boiler" for the purpose of these unit-specific conditions, is a boiler that is listed in Condition 7.25.2.
- b. Each affected boiler is subject to 35 IAC 216.121, which states that the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmBtu/hr) shall not exceed 200 ppm, corrected to 50 percent excess air [35 IAC 216.121].
- c. Each affected boiler is subject to NSPS, 40 CFR 60 Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units because each boiler was constructed after the applicable date of June 9, 1989, and each boiler has a design heat input greater than 10 mmBtu/hr. The Illinois EPA is administering these standards in Illinois on behalf of the USEPA under a delegation agreement.
- d. Each affected boiler is also subject to the opacity limits identified in Condition 5.2 of this permit.

7.25.4 Non-Applicability of Regulations of Concern

- a. Each affected boiler is not subject to 35 IAC 217.141, because the actual heat input of the each affected boiler is less than 73.2 MW (250 mmBtu/hr).

- b. Pursuant to 35 IAC 219.303, each affected boiler, i.e., fuel combustion emission unit, is not subject to 35 IAC 219.301, Use of Organic Material.
- c. There are no applicable requirements for particulate matter or sulfur dioxide for affected boilers firing natural gas.
- d. This permit is issued based on the affected boilers not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected boilers do not use an add-on control device to achieve compliance with an emission limitation or standard.

7.25.5 Operational And Production Limits And Work Practices

- a. At all times, the Permittee shall, to the extent practicable, maintain and operate each affected boiler in a manner consistent with good air pollution control practice for minimizing emissions.
- b. Operation of the affected boilers is allowed with natural gas or another gaseous fuel provided the emission limits of Condition 5.5.1 are not exceeded.
- c. Total annual consumption of natural gas by all affected boilers combined shall not exceed 970 million standard cubic feet.

7.25.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected boilers are subject to the following:

- a. Emissions from the affected boilers shall not exceed the following limits:

<u>Pollutant</u>	Pollutant Emissions	
	<u>(Lb/Hr)</u>	<u>(Ton/Year)</u>
NO _x	19.77	32.85
CO	14.69	24.38
PM	2.22	3.69
VOM	1.61	2.67

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

These limits are based on the annual fuel consumption as limited in Condition 7.25.5 and the emission rates and factors listed in Condition 7.25.12.

Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total) [T1].

The above limitations were established in Permit 98100084, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1].

7.25.7 Testing Requirements

None

7.25.8 Monitoring Requirements

None

7.25.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected boilers to demonstrate compliance with Conditions 5.5.1, 7.25.5, and 7.25.6, pursuant to Section 39.5(7)(b) of the Act:

- a. Monthly and annual natural gas usage in the affected boilers (10^3 ft³/month and 10^3 ft³/year);
- b. Heat capacity of the natural gas combusted (Btu/scf);
- c. Annual aggregate NO_x, CO, PM, SO₂, and VOM emissions from the affected boilers, based on fuel consumption and the applicable emission factors, with supporting calculations; and
- d. All the records required pursuant to 40 CFR 60.7 and 60.48c for the affected boilers, including the amount of natural gas combusted during each day (ft³/day) [40 CFR 60.48c(g)];

7.25.10 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected boiler with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:
 - i. Notification within 60 days of operation of an affected boiler that may not have been compliance with the opacity limitations in Condition 5.2.2(b), with a copy of such record for each incident.
 - ii. Emissions of NO_x, CO, PM, and VOM from the affected boilers in excess of the limits specified in Condition 7.25.6, based on the current month's records plus the preceding 11 months, within 30 days of such an occurrence.

7.25.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.25.12 Compliance Procedures

- a. Compliance with Condition 7.25.3(b), (c), and (d) is demonstrated under inherent operating conditions of an affected boiler, so that no compliance procedures are set in this permit addressing this requirement.
- b. Compliance with the emission limits in Condition 5.5.1 shall be based on the recordkeeping requirements in Condition 7.25.9 and the emission factors and formulas listed below:

<u>Pollutant</u>	<u>Emission Factor</u>	
	<u>(lb/10⁶ ft³)</u>	<u>(lb/mmBtu)</u>
PM	7.6	
SO ₂	0.6	
VOM	5.5	
NO _x		0.0661
CO		0.0491

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

These are the emission factors for uncontrolled natural gas combustion in small boilers (<100 mmBtu/hr), Tables 1.4-1 and 1.4-2, AP-42, Volume I, Supplement D, March 1998.

Boiler Emissions = (natural gas consumed, ft³) * (the appropriate emission factor, lb/10⁶ ft³) / 10⁶, or

Boiler Emissions = (heat capacity, Btu/scf) * (natural gas consumed, ft³) * (the appropriate emission factor, lb/mmBtu)/10⁶.

7.26 Loading Operations
 Control: Carbon Drums

7.26.1 Description

The Unit 290 loading operations include docks for loading wastewater condensate for offsite transport. Organic emissions and odors are controlled by carbon drums.

7.26.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
R-100	Unit 290 Truck Loading Docks (wastewater condensate)	Carbon Drums

7.26.3 Applicability Provisions and Applicable Regulations

- a. Loading operations listed in Condition 7.26.2 are "affected loading operations" for the purpose of these unit-specific conditions.
- b. The affected loading operations are subject to 35 IAC 219.122, which states that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere during the loading of any organic material from the aggregate loading pipes of any loading area having through-put of greater than 151 cubic meters per day (40,000 gal/day) into any railroad tank car, tank truck or trailer unless such loading area is equipped with submerged loading pipes or a device that is equally effective in controlling emissions and is approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with 35 IAC 219.108 [35 IAC 219.122(a)].
- c. The affected loading operations are subject to 35 IAC 219 Subpart G, Use of Organic Material, which provides that:
 - i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.26.3(d)(ii) (see also 35 IAC 219.302), 219.303, 219.304 and the following exception: If no odor nuisance exists the limitation of

35 IAC 219 Subpart G shall apply only to photochemically reactive material [35 IAC 219.301].

- ii. Pursuant to 35 IAC 219.302, emissions of organic material in excess of those permitted by Condition 7.26.3(d)(i) (see also 35 IAC 219.301) are allowable if such emissions are controlled by a vapor recovery system which adsorbs and/or condenses at least 85 percent of the total uncontrolled organic material that would otherwise be emitted to the atmosphere [35 IAC 219.302(b)].

7.26.4 Non-Applicability of Regulations of Concern

- a. This permit is issued based on the affected loading operations not being subject to 35 IAC 219 Subpart TT, because no limits of Subpart TT shall apply to emission units with emissions of VOM to the atmosphere less than or equal to 2.3 Mg (2.5 tons) per calendar year, if the total emissions from such emission units not complying with 35 IAC 219.986 does not exceed 4.5 Mg (5.0 tons) per calendar year [35 IAC 219.980(c)].
- b. This permit is issued based on the affected loading operations not being subject to the Standards of Performance for Benzene Emissions from Benzene Transfer Operations, 40 CFR 60, Subpart BB because this source is not a benzene production facility or bulk terminal [40 CFR 61.300(a)].
- c. This permit is issued based on the affected loading operations not being subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected loading operations do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.26.5 Operational And Production Limits And Work Practices

- a. In the event that the operation of this source results in an odor nuisance the Permittee shall take appropriate and necessary actions to minimize odors, including but not limited to, changes in raw material or installation of controls, in order to eliminate

the odor nuisance. This requirement was established in Permit 99070018.

- b. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein. This requirement was established in Permit 99070018.

7.26.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include these units.

7.26.7 Testing Requirements

None

7.26.8 Monitoring Requirements

The Permittee shall monitor the primary carbon drum for breakthrough and replace the primary carbon drum when breakthrough is detected.

7.26.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected loading operations to demonstrate compliance with Conditions 5.5.1, 7.26.3, and 7.26.5, pursuant to Section 39.5(7)(b) of the Act:

- a. Records of operation of the carbon adsorption drums, including:
 - i. Monitoring of primary carbon drum breakthrough;
 - ii. Date of replacement of carbon drums;
 - iii. Reason for replacement of carbon drums; and
 - iv. Quantity of carbon replaced.

- b. Records of operation and emissions, including:
 - i. Identification of the material transferred in the affected loading operations;
 - ii. The vapor pressure of the material transferred in the affected loading operations, psia;
 - iii. The throughput of the affected loading operations, gal/mo and gal/yr; and
 - iv. The monthly and aggregate annual VOM and HAP emissions from the affected loading operations based on the material transferred, the throughput, and the applicable emission factors and formulas with supporting calculations. This information for annual VOM emissions shall be included with the records required by Condition 5.6.2(e).

7.26.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of an affected loading operation with the permit requirements, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

7.26.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.26.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.26.9 and the emission factors and formulas listed below:

- a. Compliance with Condition 7.26.3(b) and (c)(i) is assumed to be achieved by proper operation of the carbon drums as addressed by Conditions 7.26.5 and 7.26.8.
- b. For the purpose of estimating VOM emissions from the affected loading operations to determine compliance with Conditions 5.5.1 and 7.26.3(d)(i), an emission factor calculated using the following equation is acceptable:

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

$$EF = 12.46 * (S * P * M / T)$$

Where:

EF = Total VOM loading emission factor (lb/1000 gallons);

S = Saturation factor, 0.6 for submerged loading and 1.0 for splash loading (dimensionless; see Table 5.2-1 of AP-42, Volume I, Fifth Edition, January, 1995);

P = Vapor pressure of the material loaded at temperature T (psia);

M = Vapor molecular weight (lb/lb-mole)

T = Temperature (°R)

8.0 GENERAL PERMIT CONDITIONS

8.1 Permit Shield

Pursuant to Section 39.5(7)(j) of the Act, the Permittee has requested and has been granted a permit shield. This permit shield provides that compliance with the conditions of this permit shall be deemed compliance with applicable requirements which were applicable as of the date the proposed permit for this source was issued, provided that either the applicable requirements are specifically identified within this permit, or the Illinois EPA, in acting on this permit application, has determined that other requirements specifically identified are not applicable to this source and this determination (or a concise summary thereof) is included in this permit.

This permit shield extends to all applicable requirements specifically identified within this permit. This permit shield does not extend to applicable requirements which are promulgated after September 6, 2003 (the date of issuance of the draft permit) unless this permit has been modified to reflect such new requirements.

8.2 Applicability of Title IV Requirements (Acid Deposition Control)

This source is not an affected source under Title IV of the CAA and is not subject to requirements pursuant to Title IV of the CAA.

8.3 Emissions Trading Programs

No permit revision shall be required for increases in emissions allowed under any USEPA approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for elsewhere in this permit and that are authorized by the applicable requirement [Section 39.5(7)(o)(vii) of the Act].

As of the date of issuance of this permit, there are no such economic incentive, marketable permit or emission trading programs that have been approved by USEPA.

8.4 Operational Flexibility/Anticipated Operating Scenarios

8.4.1 Changes Specifically Addressed by Permit

Physical or operational changes specifically addressed by the Conditions of this permit that have been identified as not requiring Illinois EPA notification may be implemented without prior notice to the Illinois EPA.

8.4.2 Changes Requiring Prior Notification

The Permittee is authorized to make physical or operational changes that contravene express permit terms without applying for or obtaining an amendment to this permit, provided that [Section 39.5(12)(a)(i) of the Act]:

- a. The changes do not violate applicable requirements;
- b. The changes do not contravene federally enforceable permit terms or conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements;
- c. The changes do not constitute a modification under Title I of the CAA;
- d. Emissions will not exceed the emissions allowed under this permit following implementation of the physical or operational change; and
- e. The Permittee provides written notice to the Illinois EPA, Division of Air Pollution Control, Permit Section, at least 7 days before commencement of the change. This notice shall:
 - i. Describe the physical or operational change;
 - ii. Identify the schedule for implementing the physical or operational change;
 - iii. Provide a statement of whether or not any New Source Performance Standard (NSPS) is applicable to the physical or operational change and the reason why the NSPS does or does not apply;
 - iv. Provide emission calculations which demonstrate that the physical or operational change will not result in a modification; and
 - v. Provide a certification that the physical or operational change will not result in emissions greater than authorized under the Conditions of this permit.

8.5 Testing Procedures

Tests conducted to measure composition of materials, efficiency of pollution control devices, emissions from process or control equipment, or other parameters shall be conducted using standard test methods. Documentation of the test date, conditions, methodologies, calculations, and test results shall be retained pursuant to the recordkeeping procedures of this permit. Reports of any tests conducted as required by this permit or as the result of a request by the Illinois EPA shall be submitted as specified in Condition 8.6.

8.6 Reporting Requirements

8.6.1 Monitoring Reports

If monitoring is required by any applicable requirements or conditions of this permit, a report summarizing the required monitoring results, as specified in the conditions of this permit, shall be submitted to the Air Compliance Section of the Illinois EPA every six months as follows [Section 39.5(7)(f) of the Act]:

<u>Monitoring Period</u>	<u>Report Due Date</u>
January - June	September 1
July - December	March 1

All instances of deviations from permit requirements must be clearly identified in such reports. All such reports shall be certified in accordance with Condition 9.9.

8.6.2 Test Notifications

Unless otherwise specified elsewhere in this permit, a written test plan for any test required by this permit shall be submitted to the Illinois EPA for review at least 60 days prior to the testing pursuant to Section 39.5(7)(a) of the Act. The notification shall include at a minimum:

- a. The name and identification of the affected unit(s);
- b. The person(s) who will be performing sampling and analysis and their experience with similar tests;

- c. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the source and any control equipment will be determined;
- d. The specific determination of emissions and operation which are intended to be made, including sampling and monitoring locations;
- e. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods;
- f. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification; and
- g. Any proposed use of an alternative test method, with detailed justification.

8.6.3 Test Reports

Unless otherwise specified elsewhere in this permit, the results of any test required by this permit shall be submitted to the Illinois EPA within 60 days of completion of the testing. The test report shall include at a minimum [Section 39.5(7)(e)(i) of the Act]:

- a. The name and identification of the affected unit(s);
- b. The date and time of the sampling or measurements;
- c. The date any analyses were performed;
- d. The name of the company that performed the tests and/or analyses;
- e. The test and analytical methodologies used;
- f. The results of the tests including raw data, and/or analyses including sample calculations;
- g. The operating conditions at the time of the sampling or measurements; and

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

- h. The name of any relevant observers present including the testing company's representatives, any Illinois EPA or USEPA representatives, and the representatives of the source.

8.6.4 Reporting Addresses

- a. The following addresses should be utilized for the submittal of reports, notifications, and renewals:

- i. Illinois EPA - Air Compliance Section

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (MC 40)
P.O. Box 19276
Springfield, Illinois 62794-9276

- ii. Illinois EPA - Air Regional Field Office

Illinois Environmental Protection Agency
Division of Air Pollution Control
2009 Mall Street
Collinsville, Illinois 62234

- iii. Illinois EPA - Air Permit Section

Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section (MC 11)
P.O. Box 19506
Springfield, Illinois 62794-9506

- iv. USEPA Region 5 - Air Branch

USEPA (AE - 17J)
Air & Radiation Division
77 West Jackson Boulevard
Chicago, Illinois 60604

- b. Unless otherwise specified in the particular provision of this permit, reports shall be sent to the Illinois EPA - Air Compliance Section with a copy sent to the Illinois EPA - Air Regional Field Office.

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

8.7 Obligation to Comply with Title I Requirements

Any term, condition, or requirement identified in this permit by T1, T1R, or T1N is established or revised pursuant to 35 IAC Part 203 or 40 CFR 52.21 ("Title I provisions") and incorporated into this permit pursuant to both Section 39.5 and Title I provisions. Notwithstanding the expiration date on the first page of this permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

9.0 STANDARD PERMIT CONDITIONS

9.1 Effect of Permit

9.1.1 The issuance of this permit does not release the Permittee from compliance with State and Federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or applicable ordinances, except as specifically stated in this permit and as allowed by law and rule [Section 39.5(7)(j)(iv) of the Act].

9.1.2 In particular, this permit does not alter or affect the following:

- a. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section;
- b. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
- c. The applicable requirements of the acid rain program consistent with Section 408(a) of the CAA; and
- d. The ability of USEPA to obtain information from a source pursuant to Section 114 (inspections, monitoring, and entry) of the CAA.

9.1.3 Notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

9.2 General Obligations of Permittee

9.2.1 Duty to Comply

The Permittee must comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the CAA and the Act, and is grounds for any or all of the following: enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application [Section 39.5(7)(o)(i) of the Act].

The Permittee shall meet applicable requirements that become effective during the permit term in a timely manner unless an alternate schedule for compliance with the applicable requirement is established.

9.2.2 Duty to Maintain Equipment

The Permittee shall maintain all equipment covered under this permit in such a manner that the performance or operation of such equipment shall not cause a violation of applicable requirements.

9.2.3 Duty to Cease Operation

No person shall cause, threaten or allow the continued operation of any emission unit during malfunction or breakdown of the emission unit or related air pollution control equipment if such operation would cause a violation of an applicable emission standard, regulatory requirement, ambient air quality standard or permit limitation unless such malfunction or breakdown is allowed by a permit condition [Section 39.5(6)(c) of the Act].

9.2.4 Disposal Operations

The source shall be operated in such a manner that the disposal of air contaminants collected by the equipment operations, or activities shall not cause a violation of the Act or regulations promulgated thereunder.

9.2.5 Duty to Pay Fees

The Permittee must pay fees to the Illinois EPA consistent with the fee schedule approved pursuant to Section 39.5(18) of the Act, and submit any information relevant thereto [Section 39.5(7)(o)(vi) of the Act]. The check should be payable to "Treasurer, State of Illinois" and sent to: Fiscal Services Section, Illinois Environmental Protection Agency, P.O. Box 19276, Springfield, Illinois 62794-9276.

9.3 Obligation to Allow Illinois EPA Surveillance

Upon presentation of proper credentials and other documents, the Permittee shall allow the Illinois EPA, or an authorized representative to perform the following [Section 39.5(7)(a) and (p)(ii) of the Act and 415 ILCS 5/4]:

- a. Enter upon the Permittee's premises where an actual or potential emission unit is located; where any regulated equipment, operation, or activity is located or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect during hours of operation any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- d. Sample or monitor any substances or parameters at any location:
 - i. At reasonable times, for the purposes of assuring permit compliance; or
 - ii. As otherwise authorized by the CAA, or the Act.
- e. Obtain and remove samples of any discharge or emission of pollutants authorized by this permit; and
- f. Enter and utilize any photographic, recording, testing, monitoring, or other equipment for the purposes of preserving, testing, monitoring, or recording any activity, discharge or emission at the source authorized by this permit.

9.4 Obligation to Comply with Other Requirements

The issuance of this permit does not release the Permittee from applicable State and Federal laws and regulations, and applicable local ordinances addressing subjects other than air pollution control.

9.5 Liability

9.5.1 Title

This permit shall not be considered as in any manner affecting the title of the premises upon which the permitted source is located.

9.5.2 Liability of Permittee

This permit does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the sources.

9.5.3 Structural Stability

This permit does not take into consideration or attest to the structural stability of any unit or part of the source.

9.5.4 Illinois EPA Liability

This permit in no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the source.

9.5.5 Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege [Section 39.5(7) (c) (iv) of the Act].

9.6 Recordkeeping

9.6.1 Control Equipment Maintenance Records

A maintenance record shall be kept on the premises for each item of air pollution control equipment. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9.6.2 Records of Changes in Operation

A record shall be kept describing changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under this permit, and the emissions resulting from those changes [Section 39.5(12) (b) (iv) of the Act].

9.6.3 Retention of Records

- a. Records of all monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit [Section 39.5(7)(e)(ii) of the Act].
- b. Other records required by this permit shall be retained for a period of at least 5 years from the date of entry unless a longer period is specified by a particular permit provision.

9.7 Annual Emissions Report

The Permittee shall submit an annual emissions report to the Illinois EPA, Compliance Section no later than May 1 of the following year, as required by 35 IAC Part 254.

9.8 Requirements for Compliance Certification

Pursuant to Section 39.5(7)(p)(v) of the Act, the Permittee shall submit annual compliance certifications. The compliance certifications shall be submitted no later than May 1 or more frequently as specified in the applicable requirements or by permit condition. The compliance certifications shall be submitted to the Air Compliance Section, Air Regional Field Office, and USEPA Region 5 - Air Branch. The addresses for the submittal of the compliance certifications are provided in Condition 8.6.4 of this permit.

- a. The certification shall include the identification of each term or condition of this permit that is the basis of the certification; the compliance status; whether compliance was continuous or intermittent; the method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.
- b. All compliance certifications shall be submitted to USEPA Region 5 in Chicago as well as to the Illinois EPA.
- c. All compliance reports required to be submitted shall include a certification in accordance with Condition 9.9.

9.9 Certification

Any document (including reports) required to be submitted by this permit shall contain a certification by a responsible official of the Permittee that meets the requirements of Section 39.5(5) of the Act [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included as an attachment to this permit.

9.10 Defense to Enforcement Actions

9.10.1 Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit [Section 39.5(7)(o)(ii) of the Act].

9.10.2 Emergency Provision

- a. An emergency shall be an affirmative defense to an action brought for noncompliance with the technology-based emission limitations under this permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:
 - i. An emergency occurred as provided in Section 39.5(7)(k) of the Act and the Permittee can identify the cause(s) of the emergency. For purposes of this subsection, "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, such as an act of God, that requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operation error.;
 - ii. The permitted source was at the time being properly operated;

- iii. The Permittee submitted notice of the emergency to the Illinois EPA within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken; and
 - iv. During the period of the emergency the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission limitations, standards, or regulations in this permit.
- b. This provision is in addition to any emergency or upset provision contained in any applicable requirement. This provision does not relieve a Permittee of any reporting obligations under existing federal or state laws or regulations.

9.11 Permanent Shutdown

This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shut down. This permit expires if all equipment is removed from the permitted location(s), notwithstanding the expiration date specified on this permit.

9.12 Reopening and Reissuing Permit for Cause

9.12.1 Permit Actions

This permit may be modified, reopened, and reissued, for cause pursuant to Section 39.5(15) of the Act. The filing of a request by the Permittee for a permit modification, revocation, and reissuance, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition [Section 39.5(7)(o)(iii) of the Act].

9.12.2 Reopening and Revision

This permit must be reopened and revised if any of the following occur [Section 39.5(15) (a) of the Act]:

- a. Additional requirements become applicable to the equipment covered by this permit and three or more years remain before expiration of this permit;
- b. Additional requirements become applicable to an affected source for acid deposition under the acid rain program;
- c. The Illinois EPA or USEPA determines that this permit contains a material mistake or inaccurate statement when establishing the emission standards or limitations, or other terms or conditions of this permit; and
- d. The Illinois EPA or USEPA determines that this permit must be revised to ensure compliance with the applicable requirements of the Act.

9.12.3 Inaccurate Application

The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation under Section 39.5(15) (b) of the Act.

9.12.4 Duty to Provide Information

The Permittee shall furnish to the Illinois EPA, within a reasonable time specified by the Illinois EPA any information that the Illinois EPA may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to the Illinois EPA copies of records required to be kept by this permit, or for information claimed to be confidential, the Permittee may furnish such records directly to USEPA along with a claim of confidentiality [Section 39.5(7) (o) (v) of the Act].

9.13 Severability Clause

The provisions of this permit are severable, and should any one or more be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected. The rights and obligations of the Permittee shall be construed and enforced as if this permit did not contain the particular

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

provisions held to be invalid and the applicable requirements underlying these provisions shall remain in force [Section 39.5(7) (i) of the Act].

9.14 Permit Expiration and Renewal

The right to operate terminates on the expiration date unless the Permittee has submitted a timely and complete renewal application. For a renewal to be timely it must be submitted no later than 9 and no sooner than 12 months prior to expiration. The equipment may continue to operate during the renewal period until final action is taken by the Illinois EPA, in accordance with the original permit conditions [Section 39.5(5) (l), (n), and (o) of the Act].

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

10.1 Attachment 1 - Example Certification by a Responsible Official

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Name: _____

Official Title: _____

Telephone No.: _____

Date Signed: _____

10.2 Attachment 2 Particulate Matter Emissions from Process
 Emission Units

10.2.1 Section 212.321 - Process Emission Units For Which
 Construction or Modification Commenced On or After
 April 14, 1972.

- a. Except as further provided in 35 IAC Part 212, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of this Section.
- b. Interpolated and extrapolated values of the data in subsection (c) of this Section shall be determined by using the equation:

$$E = A(P)^B$$

Where:

P = Process weight rate; and

E = Allowable emission rate; and,

- i. Up to process weight rates of 408 Mg/hr (450 Ton/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	Ton/hr
E	kg/hr	lbs/hr
A	1.214	2.54
B	0.534	0.534

- ii. For process weight rate greater than or equal to 408 Mg/hr (450 Ton/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	Ton/hr
E	kg/hr	lbs/hr
A	11.42	24.8
B	0.16	0.16

c. Limits for Process Emission Units For Which
Construction of Modification Commenced On or After
April 14, 1972

Metric		English	
P	E	P	E
<u>Mg/hr</u>	<u>kg/hr</u>	<u>Ton/hr</u>	<u>lbs/hr</u>
0.05	0.25	0.05	0.55
0.1	0.29	0.10	0.77
0.2	0.42	0.20	1.10
0.3	0.64	0.30	1.35
0.4	0.74	0.40	1.58
0.5	0.84	0.50	1.75
0.7	1.00	0.75	2.40
0.9	1.15	1.00	2.60
1.8	1.66	2.00	3.70
2.7	2.1	3.00	4.60
3.6	2.4	4.00	5.35
4.5	2.7	5.00	6.00
9.	3.9	10.00	8.70
13.	4.8	15.00	10.80
18.	5.7	20.00	12.50
23.	6.5	25.00	14.00
27.	7.1	30.00	15.60
32.	7.7	35.00	17.00
36.	8.2	40.00	18.20
41.	8.8	45.00	19.20
45.	9.3	50.00	20.50
90.	13.4	100.00	29.50
140.	17.0	150.00	37.00
180.	19.4	200.00	43.00
230.	22.	250.00	48.50
270.	24.	300.00	53.00
320.	26.	350.00	58.00
360.	28.	400.00	62.00
408.	30.1	450.00	66.00
454.	30.4	500.00	67.00

Where:

P = Process weight rate in Mg/hr or Ton/hr, and

E = Allowable emission rate in kg/hr or lbs/hr.

10.2.2 Section 212.322 - Process Emission Units For Which
Construction or Modification Commenced Prior to
April 14, 1972

- a. Except as further provided in 35 IAC Part 212, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in subsection (c) of this Section.
- b. Interpolated and extrapolated values of the data in subsection (c) of this Section shall be determined by using the equation:

$$E = C + A(P)^B$$

Where:

P = Process weight rate; and,

E = Allowable emission rate; and,

- i. For process weight rates up to 27.2 Mg/hr (30 Ton/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	Ton/hr
E	kg/hr	lbs/hr
A	1.985	4.10
B	0.67	0.67
C	0	0

- ii. For process weight rates in excess or 27.2 Mg/hr (30 Ton/hr):

	<u>Metric</u>	<u>English</u>
P	Mg/hr	Ton/hr
E	kg/hr	lbs/hr
A	25.21	55.0
B	0.11	0.11
C	-18.4	-40.0

- c. Limits for Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972

PROPOSED CAAPP PERMIT
 Ethyl Petroleum Additives, Inc.
 I.D. No.: 163121AAB
 Application No.: 95120012
 November 18, 2003

Metric		English	
P	E	P	E
<u>Mg/hr</u>	<u>kg/hr</u>	<u>Ton/hr</u>	<u>lbs/hr</u>
0.05	0.27	0.05	0.55
0.1	0.42	0.10	0.87
0.2	0.68	0.20	1.40
0.3	0.89	0.30	1.83
0.4	1.07	0.40	2.22
0.5	1.25	0.50	2.58
0.7	1.56	0.75	3.38
0.9	1.85	1.00	4.10
1.8	2.9	2.00	6.52
2.7	3.9	3.00	8.56
3.6	4.7	4.00	10.40
4.5	5.4	5.00	12.00
9.	8.7	10.00	19.20
13.	11.1	15.00	25.20
18.	13.8	20.00	30.50
23.	16.2	25.00	35.40
27.2	18.15	30.00	40.00
32.0	18.8	35.00	41.30
36.0	19.3	40.00	42.50
41.0	19.8	45.00	43.60
45.0	20.2	50.00	44.60
90.0	23.2	100.00	51.20
140.0	25.3	150.00	55.40
180.0	26.5	200.00	58.60
230.0	27.7	250.00	61.00
270.0	28.5	300.00	63.10
320.0	29.4	350.00	64.90
360.0	30.0	400.00	66.20
400.0	30.6	450.00	67.70
454.0	31.3	500.00	69.00

Where:

P = Process weight rate in Mg/hr or Ton/hr, and

E = Allowable emission rate in kg/hr or lbs/hr.

10.3 Attachment 3 Tables indicating contemporaneous increases and decreases

10.3.1 Net SO₂ emissions increase determination from Unit 266 Production Increase, Construction Permit 98100080 (originally issued on 4/26/1999).

Table 1 - SO₂ Emissions from This Project

Total SO₂ emissions increase from the debottlenecking of Unit 266 (ZDDP manufacturing).

<u>Description</u>	<u>Permit Number</u>	<u>Date Issued</u>	<u>SO₂ Emissions (Ton/Year)</u>
Previous operation	95090198	12/22/1995	58.7
Proposed operation	98100080	4/26/1999	<u>107.70</u>
Difference			49.0

Emissions from previous operation are based on the permitted emission limit, rather than the previous actual emissions, so that emissions are not counted twice (see Unit 266 increase in Table 2 below). Since the total difference is greater than 40 tons per year, this project by itself was a significant increase in SO₂ emissions.

Table 2 - SO₂ Emissions Increases

Total combined SO₂ emissions increases from this source during the contemporaneous time period.

<u>Description</u>	<u>Permit Number</u>	<u>Date Issued</u>	<u>SO₂ Emissions (Ton/Year)</u>
Unit 290 Startup	94110112	1/30/1995	34.9
Unit 266 Expansion	95090198	12/22/1995	<u>36.0</u>
Total			70.9

Table 2 - SO₂ Emissions Decreases

Total combined SO₂ emissions decreases from this source during the contemporaneous time period.

<u>Description</u>	<u>Permit Number</u>	<u>Date Issued</u>	<u>SO₂ Emissions (Ton/Year)</u>
Unit 258 Continuous Scrubber	96050095	7/8/1998	84.1

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

This decrease is based on the current limit of 24.4 tons per year and the average annual emissions calculated using the 24 month period of October 1995 to September 1997, before startup of the continuous scrubber. The average annual emissions were 110.7 tons, which is decreased by 2% to account for emissions which exceed 2000 ppm (35 IAC 214.301):

$$110.7 \text{ ton/year} * 98\% - 24.4 \text{ ton/year} = 84.1 \text{ ton/year}$$

Table 4 - Net SO₂ Emission Increase Determination

Description	SO ₂ Emissions (Ton/Year)
Proposed Project Increase	+ 49.0
Contemporaneous Increase	+ 70.9
Contemporaneous Decrease	<u>- 84.1</u>
Net Increase	+ 35.8

10.4 Attachment 4 - ACS Permit Findings

Permit 82120030 was issued based upon and subject to the following findings. They are provided here for informational purposes. Finding 3(c) was revised and Finding 3(d) was added to reflect the current operating scenario.

1. The Permittee, Ethyl Petroleum Additives was issued a permit to operate an expanded ABSA process under an Alternative Control Strategy (ACS) on August 10, 1983. The ACS provides that in lieu of controlling sulfur dioxide (SO₂) emissions from the ABSA process to comply with 35 IAC 214.301, SO₂ emissions from the ZDDP process will be reduced by routing the off gases through the scrubber on the sulfurized isobutylene (SIB) operation. Following scrubbing the off gases "return" to the ZDDP process, along with the SIB off gases, to be flared. ACSs are governed by the Illinois Pollution Control Board's Rules and Regulations, 35 IAC Part 202, Alternative Control Strategies.
2. Ethyl Petroleum Additives replaced the sulfonation unit in the ABSA operation. The Illinois EPA has determined that the new sulfonation unit would constitute a minor change to the ACS permit because it further reduces the emissions of the ZDDP operation, at which emission credits are generated, greatly reduces both total actual and excess emissions of the ABSA operation, and is accompanied by an improved vent configuration at the ABSA operation.
3. The SO₂ emissions involved in the ACS are as follows:
 - a. Emissions Baseline, prior to expansion of ABSA Operation:

(Baseline determined using actual emissions of SO₂, which were within the requirements of 35 IAC 214.301)

	Average Hourly (Lb/Hr)	Maximum Hourly Allowable (Lb/Hr)	Annual (T/Yr)
ABSA Operation	23.3	29.1	101
ZDDP Operation	<u>230.0</u>	<u>360.0</u>	<u>1,005</u>
	253.3	389.1	1,106

- b. Emission under the Revised ACS Permits issued in 1987 and 1992 were as follows:

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Allowable <u>(Tons/Yr)</u>	<u>Maximum Hourly Allowable (Lb/Hr)</u>	Annual
ABSA Operation	49.4	216
ZDDP Operation	<u>100.0</u>	<u>440</u>
	149.4	656

- c. Emissions under the Revised ACS Permits issued on January 8, 1996, as a result of incorporating the conditions from Construction Permit 95090198 were as follows:

	<u>Maximum Hourly Allowable (Lb/Hr)</u>	<u>Maximum Weekly Allowable (Lb/Wk)</u>	<u>Annual Allowable (Ton/Yr)</u>
ABSA Operation	49.4		216
ZDDP Operation		2,300 ^a	<u>58.7</u>
			274.7

^a Emissions determined weekly but allowable is running average of four weeks of data.

- d. Emissions under this permit, as a result of incorporating the emission limits from Construction Permit 96050095, as issued on July 8, 1998, and Joint Construction and Operating Permit 98100080, as issued on April 26, 1999, are as follows:

Allowable <u>(Tons/Yr)</u>	<u>Short Term Limit</u>	Annual
ABSA Process	8.0 Tons/4-Week Period	24.4
ZDDP Process	10.77 Tons/Month	<u>107.7</u>
		132.1

4. The Illinois EPA's review of the application and its accompanying analyses demonstrate that a) the reduction in sulfur dioxide emissions is substantially greater than that required to comply with 35 IAC 214.301, b) the impact of the ACS is environmentally equivalent to or better than that which would otherwise be achieved and maintained under existing requirements, and c) the methods for assuring compliance with the terms of the ACS are equivalent to or better than those that are associated

with otherwise applicable requirements. The Illinois EPA's review also indicates that emission sources which are not part of the "trade" comply with applicable limits. Accordingly, the Illinois EPA has determined that the ACS is consistent with all applicable Illinois Rules and Regulations, Title 35, Subtitle B: Air Pollution, and the Illinois Environmental Protection Act.

5. The Illinois EPA is issuing a permit subject to the following conditions and consistent with the specifications and data included in the permit application. Any departure from the conditions of this permit or terms expressed in the application would need to receive prior written authorization of Illinois EPA.
6. The issuance of this permit does not indicate that further reductions in SO₂ emissions will not be required of the Permittee to demonstrate attainment of the SO₂ air quality standards in the Sauget area. Further reductions could be required, either directly as a result of the Illinois EPA's evaluation, in certain circumstances, or as a consequence of a proceeding by the Illinois Pollution Control Board revising SO₂ emission limits.
7. In the issuance of this permit the Illinois EPA has considered requirements of Illinois law and regulation. In particular, the Illinois EPA has not addressed in depth whether this permit would be approvable under USEPA's Emissions Trading Policy (51 FR 43814).

10.5 Attachment 5 - Guidance on Revising This Permit

The Permittee must submit an application to the Illinois EPA using the appropriate revision classification in accordance with Sections 39.5(13) and (14) of the Act and 35 IAC 270.302. Specifically, there are currently three classifications for revisions to a CAAPP permit. These are:

1. Administrative Permit Amendment;
2. Minor Permit Modification; and
3. Significant Permit Modification.

The Permittee must determine, request, and submit the necessary information to allow the Illinois EPA to use the appropriate procedure to revise the CAAPP permit. A brief explanation of each of these classifications follows.

1. Administrative Permit Amendment
 - Corrects typographical errors;
 - Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;
 - Requires more frequent monitoring or reporting by the Permittee;
 - Allows for a change in ownership or operational control of the source where no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new Permittees has been submitted to the Illinois EPA. This shall be handled by completing form 272-CAAPP, REQUEST FOR OWNERSHIP CHANGE FOR CAAPP PERMIT; or
 - Incorporates into the CAAPP permit a construction permit, provided the conditions of the construction permit meet the requirements for the issuance of CAAPP permits.

2. Minor Permit Modification

- Do not violate any applicable requirement;
- Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- Do not require a case-by-case determination of an emission limitation or other standard, or a source-specific determination of ambient impacts, or a visibility or increment analysis;
- Do not seek to establish or change a permit term or condition for which there is no corresponding underlying requirement and which avoids an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of Title I of the CAA; and
 - An alternative emissions limit approved pursuant to regulations promulgated under Section 112(i)(5) of the CAA.
- Are not modifications under any provision of Title I of the CAA;
- Are not required to be processed as a significant permit modification; and
- Modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches.

An application for a minor permit modification shall include the following:

- A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;
- The source's suggested draft permit/conditions;
- Certification by a responsible official that the proposed modification meets the criteria for use of minor permit modification procedures and a request that such procedures be used; and

- Information as contained on form 271-CAAPP, MINOR PERMIT MODIFICATION FOR CAAPP PERMIT for the Illinois EPA to use to notify USEPA and affected States.

3. Significant Permit Modification

- Applications that do not qualify as either minor permit modifications or as administrative permit amendments;
- Applications requesting a significant change in existing monitoring permit terms or conditions;
- Applications requesting a relaxation of reporting or recordkeeping requirements; and
- Cases in which, in the judgment of the Illinois EPA, action on an application for modification would require decisions to be made on technically complex issues.

An application for a significant permit modification shall include the following:

- A detailed description of the proposed change(s), including all physical changes to equipment, changes in the method of operation, changes in emissions of each pollutant, and any new applicable requirements which will apply as a result of the proposed change. Note that the Permittee need only submit revised forms for equipment and operations that will be modified.

The Illinois EPA requires the information on the following appropriate forms to be submitted in accordance with the proper classification:

- Form 273-CAAPP, REQUEST FOR ADMINISTRATIVE PERMIT AMENDMENT FOR CAAPP PERMIT; or
- Form 271-CAAPP, MINOR PERMIT MODIFICATION FOR CAAPP PERMIT; or
- Form 200-CAAPP, APPLICATION FOR CAAPP PERMIT (for significant modification).

PROPOSED CAAPP PERMIT
Ethyl Petroleum Additives, Inc.
I.D. No.: 163121AAB
Application No.: 95120012
November 18, 2003

Application forms can be obtained from the Illinois EPA website
at <http://www.epa.state.il.us/air/forms>.

Note that the request to revise the permit must be certified for
truth, accuracy, and completeness by a responsible official.

Note that failure to submit the required information may require
the Illinois EPA to deny the application. The Illinois EPA
reserves the right to require that additional information be
submitted as needed to evaluate or take final action on
applications pursuant to Section 39.5(5)(g) of the Act and 35 IAC
270.305.



Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Application For Construction Permit (For CAAPP Sources Only)	For Illinois EPA use only
	I.D. number:
	Permit number:
	Date received:

This form is to be used by CAAPP sources to supply information necessary to obtain a construction permit. Please attach other necessary information and completed CAAPP forms regarding this construction/modification project.

Source Information		
1. Source name:		
2. Source street address:		
3. City:	4. Zip code:	
5. Is the source located within city limits? <input type="checkbox"/> Yes <input type="checkbox"/> No		
6. Township name:	7. County:	8. I.D. number:

Owner Information		
9. Name:		
10. Address:		
11. City:	12. State:	13. Zip code:

Operator Information (if different from owner)		
14. Name		
15. Address:		
16. City:	17. State:	18. Zip code:

Applicant Information	
19. Who is the applicant? <input type="checkbox"/> Owner <input type="checkbox"/> Operator	20. All correspondence to: (check one) <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Source
21. Attention name and/or title for written correspondence:	
22. Technical contact person for application:	23. Contact person's telephone number:

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Summary Of Application Contents	
24. Does the application address whether the proposed project would constitute a new major source or major modification under each of the following programs: a) Non-attainment New Source Review – 35 IAC Part 203; b) Prevention of Significant Deterioration (PSD) – 40 CFR 52.21; c) Hazardous Air Pollutants: Regulations Governing Constructed or Reconstructed Major Sources – 40 CFR Part 63?	<input type="checkbox"/> Yes <input type="checkbox"/> No
25. Does the application identify and address all applicable emissions standards, including those found in the following: a) Board Emission Standards – 35 IAC Chapter I, Subtitle B; b) Federal New Source Performance Standards – 40 CFR Part 60; c) Federal Standards for Hazardous Air Pollutants – 40 CFR Parts 61 and 63?	<input type="checkbox"/> Yes <input type="checkbox"/> No
26. Does the application include a process flow diagram(s) showing all emission units and control equipment, and their relationship, for which a permit is being sought?	<input type="checkbox"/> Yes <input type="checkbox"/> No
27. Does the application include a complete process description for the emission units and control equipment for which a permit is being sought?	<input type="checkbox"/> Yes <input type="checkbox"/> No
28. Does the application include the information as contained in completed CAAPP forms for all appropriate emission units and air pollution control equipment, listing all applicable requirements and proposed exemptions from otherwise applicable requirements, and identifying and describing any outstanding legal actions by either the USEPA or the Illinois EPA? Note: The use of "APC" application forms is not appropriate for applications for CAAPP sources. CAAPP forms should be used to supply information.	<input type="checkbox"/> Yes <input type="checkbox"/> No
29. If the application contains TRADE SECRET information, has such information been properly marked and claimed, and have two separate copies of the application suitable for public inspection and notice been submitted, in accordance with applicable rules and regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable, No TRADE SECRET information in this application

Note 1: Answering "No" to any of the above may result in the application being deemed incomplete.

Signature Block	
This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete.	
30. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete. Authorized Signature:	
BY:	_____
AUTHORIZED SIGNATURE	TITLE OF SIGNATORY
_____	_____/_____/_____
TYPED OR PRINTED NAME OF SIGNATORY	DATE

Note 2: An operating permit for the construction/modification permitted in a construction permit must be obtained by applying for the appropriate revision to the source's CAAPP permit, if necessary.

10.7 Attachment 7 - Guidance on Renewing This Permit

Timeliness - Pursuant to Section 39.5(5)(n) of the Act and 35 IAC 270.301(d), a source must submit to the Illinois EPA a complete CAAPP application for the renewal of a CAAPP permit not later than 9 months before the date of permit expiration of the existing CAAPP permit in order for the submittal to be deemed timely. Note that the Illinois EPA typically sends out renewal notices approximately 18 months prior to the expiration of the CAAPP permit.

The CAAPP application must provide all of the following information in order for the renewal CAAPP application to be deemed complete by the Illinois EPA:

1. A completed renewal application form 200-CAAPP, APPLICATION FOR CAAPP PERMIT.
2. A completed compliance plan form 293-CAAPP, COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE FOR CAAPP PERMIT.
3. A completed compliance certification form 296-CAAPP, COMPLIANCE CERTIFICATION, signed by the responsible official.
4. Any applicable requirements that became effective during the term of the permit and that were not included in the permit as a reopening or permit revision.
5. If this is the first time this permit is being renewed and this source has not yet addressed CAM, the application should contain the information on form 464-CAAPP, COMPLIANCE ASSURANCE MONITORING (CAM) PLAN.
6. Information addressing any outstanding transfer agreement pursuant to the ERMS.
7. a. If operations of an emission unit or group of emission units remain unchanged and are accurately depicted in previous submittals, the application may contain a letter signed by a responsible official that requests incorporation by reference of existing information previously submitted and on file with the Illinois EPA. This letter must also include a statement that information incorporated by reference is also being certified for truth and accuracy by the responsible official's signing of the form 200-CAAPP, APPLICATION FOR CAAPP PERMIT and the form 296-CAAPP, COMPLIANCE CERTIFICATION. The boxes should be marked yes on form 200-CAAPP, APPLICATION FOR CAAPP PERMIT, as existing information is being incorporated by reference.

- b. If portions of current operations are not as described in previous submittals, then in addition to the information above for operations that remain unchanged, the application must contain the necessary information on all changes, e.g., discussion of changes, new or revised CAAPP forms, and a revised fee form 292-CAAPP, FEE DETERMINATION FOR CAAPP PERMIT, if necessary.
8. Information about all off-permit changes that were not prohibited or addressed by the permit to occur without a permit revision and the information must be sufficient to identify all applicable requirements, including monitoring, recordkeeping, and reporting requirements, for such changes.
9. Information about all changes made under 40 CFR 70.4(b)(12)(i) and (ii) that require a 7-day notification prior to the change without requiring a permit revision.

The Illinois EPA will review all applications for completeness and timeliness. If the renewal application is deemed both timely and complete, the source shall continue to operate in accordance with the terms and conditions of its CAAPP permit until final action is taken on the renewal application.

Notwithstanding the completeness determination, the Illinois EPA may request additional information necessary to evaluate or take final action on the CAAPP renewal application. If such additional information affects your allowable emission limits, a revised form 292-CAAPP, FEE DETERMINATION FOR CAAPP PERMIT must be submitted with the requested information. The failure to submit to the Illinois EPA the requested information within the time frame specified by the Illinois EPA, may force the Illinois EPA to deny your CAAPP renewal application pursuant to Section 39.5 of the Act.

Application forms may be obtained from the Illinois EPA website at <http://www.epa.state.il.us/air/forms.html>.

If you have any questions regarding this matter, please contact a permit analyst at 217/782-2113.

Mail renewal applications to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section (MC 11)
P.O. Box 19506
Springfield, Illinois 62794-9506

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