PROPOSED CAAPP PERMIT
December 30, 2008

217/782-2113

RENEWAL
CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT

PERMITTEE:

Stepan Company Millsdale Plant
Attn: R. M. Mauser, EHS Manager
22500 West Millsdale Road
Elwood, Illinois 60421-9646

I.D. No.: 197800AAE
Application No.: 96030061

Date Received: October 12, 2004
Date Issued: To Be Determined
Expiration Date[1]: To Be Determined

Operation of: Manufacture of Specialty Chemicals, Polymers and Surfactants
Source Location: 22500 West Millsdale Road, Elwood, Will County
Responsible Official: James D. Beaulieu, Plant Manager

This permit is hereby granted to the above-designated Permittee to OPERATE a specialty chemical manufacturing plant, 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 Dan Punzak at 217/782-2113.

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

ECB:DGP:psj

cc: Illinois EPA, FOS, Region 1
CES
Lotus Notes

1 Except as provided in Conditions 1.5 and 8.7 of this permit.

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1.0 INTRODUCTION

1.1 Source Identification

Stepan Company Millsdale Plant
22500 West Millsdale Road
Elwood, Illinois 60421
815/727-4944

I.D. No.: 197800AAE
County: Will County
Standard Industrial Classification: 2843

1.2 Owner/Parent Company

Stepan Company
22 West Frontage Road
Northfield, Illinois 60093

1.3 Operator

Stepan Company Millsdale Plant
22500 West Millsdale Road
Elwood, Illinois 60421

E. L. Moodie, Environmental Engineer
815/774-5204

1.4 Source Description

The Stepan Company Millsdale Plant is located at 22500 West Millsdale Road, Elwood in Will County. The source manufactures specialty organic chemicals such as surfactants and biodiesel. In addition, the source operates boilers to supply steam for the manufacturing processes.

Note: This narrative description is for informational purposes only and is not enforceable.

1.5 Title I Conditions

As generally identified below, this CAAPP permit contains certain conditions for emission units at this source that address the applicability of permitting programs for the construction and modification of sources, which programs were established pursuant to Title I of the Clean Air Act (CAA) and regulations thereunder. These programs include PSD and MSSCAM, and are implemented by the Illinois EPA pursuant to Sections 9, 9.1, 39(a) and 39.5(7)(a) of the Illinois Environmental Protection Act (Act). These conditions continue in effect, notwithstanding the expiration date specified on the first page of this permit, as their authority derives from Titles I and V of the CAA, as well as Titles II and X of the Act. (See also Condition 8.7.)

a. This permit contains Title I conditions that reflect Title I requirements established in permits previously issued for this source, which conditions are specifically designated as “T1.”

2.0 LIST OF ABBREVIATIONS AND ACRONYMS COMMONLY USED

ACMA	Alternative Compliance Market Account
Act	Illinois Environmental Protection Act [415 ILCS 5/1 et seq.]
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
ATU	Allotment Trading Unit
BACT	Best Available Control Technology
BAT	Best Available Technology
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
ERMS	Emissions Reduction Market System
HAP	Hazardous Air Pollutant
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
LDAR	Leak Detection and Repair
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MSSCAM	Major Stationary Sources Construction and Modification (35 IAC 203, New Source Review for non-attainment areas)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOCS	Notice of Compliance Status (for NESHAP rules)
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
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
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
PA	Phthalic Anhydride
PLC	Programmable Logic Controller
PSD	Prevention of Significant Deterioration (40 CFR 52.21, New Source Review for attainment areas)
RMP	Risk Management Plan
SO_2	Sulfur Dioxide
SO_3	Sulfur Trioxide
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
TRE	Total Resource Effectiveness
USEPA	United States Environmental Protection Agency
UTAME	Uncontrolled Total Annual Mass Emissions of VOM
VOL	Volatile Organic Liquid
VOM	Volatile Organic Material
VPL	Volatile Petroleum Liquid
wt. %	weight percent

3.0 CONDITIONS FOR 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:

Tanks containing HAPs and TANKS2 program determined emissions under 0.1 lb/hr pursuant to 201.211(a)(2):

422-102, 443-060, 445-039, 445-040, 445-053, 445-054, 441-452, 443-020, 448-004, 441-039, 441-040, 441-046, 441-050, 441-112, 441-016, 443-139, 443-172, 422-272, 441-407, 443-262, 445-066, 441-042, 441-057, 441-087, 441-099, 441-290, 441-363, 441-371, 443-025, 443-173, 443-192, 443-193, 443-197, 443-215, 443-220, 443-238, 443-308, 443-309, 443-310, 443-311, 444-083, 445-030, 445-032 and 445-068, Waste

Tanks (10) not containing HAPs and TANKS2 program determined emissions under 1.0 lb/hr pursuant to 201.211(a)(1):

443-008, 443-156, 443-164, 444-076, 444-078, 444-079, 441-453, 443-024, 443-273 and 443-275

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:

Ten Continuous Neutralizers, Nos. 959-037, 31R-904, 622-012, 431-071, M-11, PFCR, PFTSR, T952, 434-031, and 959-046

Four Deaerators, Nos. 421-117, 421-120, 421-126, and 421-127

One Batch Sulfonator, No. 434-010, and two Batch Reactors, No. 084-285 and 434-001P

Two PTC Sulfonators, Nos. R362A - R367W
One PTC Dryer, No. 51-K1-PTC-1

The following storage tanks numbers (184):

441-106, 422-191, 422-192, 441-014, 441-088, 441-298, 441-324, 441-334, 442-005,443-006, 443-007, 441-041, 441-052, 441-061, 443-105, 443-211, 443-212, 443-213, 443-214, 443-234, 443-325, 443-329, 443-330, 445-010, 443-013, 443-174, 443-187, 443-188, 441-282, 441-405, 443-023, 443-026, 441-017, 441-018, 441-019, 441-020, 441-021, 441-055, 441-058, 441-273, 441-274, 441-276, 441-279, 441-292, 441-328, 441-395, 441-396, 441-397, 441-398, 441-399, 441-400, 443-218, 445-031, 445-002, 422-173, 422-174, 422-175, 422-176, 422-177, 422-178, 422-179, 422-180, 422-181,

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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:

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)].

Die casting machines where a metal or plastic is formed under pressure in a die [35 IAC 201.210(a)(12)].

Gas turbines and stationary reciprocating internal combustion engines of less than 112 kW (150 horsepower) power output [35 IAC 201.210(a)(15)].

Gas turbines and stationary reciprocating internal combustion engines of between 112 kW and 1,118 kW (150 and 1,500 horsepower) power output that are emergency or standby units [35 IAC 201.210(a)(16)].

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). Note: These activities are not required to be individually listed.

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 5.3.2), the Permittee shall comply with the following requirements, as applicable:

3.2.1 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 (see Attachment 2) and 35 IAC Part 266. 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.

3.2.2 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 218.301, which requires that organic material emissions not exceed 8.0 pounds per hour or, if no odor nuisance exists, do not qualify as photochemically reactive material as defined in 35 IAC 211.4690.

3.2.3 For each open burning activity, the Permittee shall comply with 35 IAC Part 237, including the requirement to obtain a permit for open burning in accordance with 35 IAC 237.201, if necessary.

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

3.2.5 For each storage tank that has a storage capacity greater than 946 liters (250 gallons) and, if no odor nuisance exists, that stores an organic material with a vapor pressure exceeding 2.5 psia at 70°F, the Permittee shall comply with the applicable requirements of 35 IAC 218.122, which requires use of a permanent submerged loading pipe, submerged fill, or a vapor recovery system.

3.2.6 For each emission unit required to be included in determining applicability of 35 IAC 218 Subparts RR or TT, total VOM emissions from insignificant activities (including storage and

handling of formulations) in conjunction with the applicable emission units in Section 7 of this permit shall not equal or exceed 25 ton/yr.

3.2.7 For each organic material emission unit that is exempt from the control requirements of 35 IAC 218 Subpart TT, the Permittee shall maintain emissions of VOM to the atmosphere less than or equal to 2.3 Mg (2.5 tons) per calendar year. The total emissions from emission units (including insignificant and significant activities) not complying with 35 IAC 218.986 shall not exceed 4.5 Mg (5.0 tons) per calendar year.

3.2.8 For each organic material emission unit that is exempt from the control requirements of 35 IAC 218 Subpart RR, the Permittee shall maintain emissions of VOM to the atmosphere less than or equal to 0.91 Mg (1.0 tons) per calendar year. The total emissions from emission units (including insignificant and significant activities) not complying with 35 IAC 218.966 shall not exceed 4.5 Mg (5.0 tons) per calendar year.

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).

4.0 SIGNIFICANT EMISSION UNITS AT THIS SOURCE

Emission Unit	Description	Date Constructed	Emission Control Equipment
Section 7.1	Air Oxidation Process		
422-217, 422-227, 422-228, 422-283 421-030 421-031	Four Parallel Converters (Reactors) Parallel Pretreaters	1977 1979 1979 1998 1983 1990	Three Catalytic Reactors (435-003 to 005)
401-006	Pre-Distillation Column with Material Recovery Condenser (411-174)	1979	None
401-005	Main Distillation Column with Material Recovery Condenser (411-173)	1979	None
431-019	Batch Residue Column with Material Recovery Condenser (411-139)	1979	Secondary Vent to Pretreaters
656-003, 656-006, & 007	Three Flakers, Residue Drumming and T/C Loading	1981	Baghouse
Fugitive Emissions			Leak Detection and Repair Program
Section 7.2	Batch Processes		
EUTOX	Toximul Reactor (431-072) and Two Blend Tanks (431-055 and 431-087)	Pre-1972	None
EUN	Batch Neutralizers (32)		None for All
	M1 (443-034)	1973	
	M2 (443-035)	1973	
	M3 (431-044)	1973	
	M4 (431-060)	1973	
	M5 (431-086)	1988	
	M6 (443-041)	1988	
	M7 (431-090)	1988	
	M8 (421-103)	1990	
	M9 (421-095)	1990	
	M10 (443-268)	1990	
	C4 (431-031)	1973	
	C5 (431-032)	1973	
	C6 (431-052)	1973	

Emission Unit	Description	Date Constructed	Emission Control Equipment
	C7 (443-207)	1973	
	C8 (421-096)	1973	
	C10 (434-019)	1973	
	C11 (434-032)	Pre-1972	
	E1(443-157)	1975	
	E2 (443-162)	1975	
	E3 (443-161)	1975	
	E4 (421-094)	1990	
	E5 (421-097)	1990	
	E6 (443-160)	1975	
	E7 (431-068)	1986	
	H6K (421-125) H8K (433-001)	1998 Pre-1972	
EUN	Amphoteric Betaines R814(433-006)	2007	None
EUBD	F16K (432-084) F18K(421-098) F28K(431-104) Biodiesel Reactors (See also Section 7.3 for a Continuous EUBD Process)	2005	Scrubber S-928 (393-022)
EUAM	Amides Process Blend Tank (421-027) Toximul Amides Reactor (431-061)	1973 1973	
	Amide Reactors (2K, 434-011 and 7K, 431-074)	1973 1978	Condenser and Subcooler on Each 2K and 7K Line. Vent Condenser on the Vacuum Pump. Scrubber S-803 after Vent Condenser.

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUE	Esterification Processes A-4 Reactor (422-156) Esters Fractionator (401-004) MPR Reactor (431-095)	 1973 1973 1989	 Scrubber S-105 Scrubber S-105 Scrubber S-105
EUH	Hydrotropes Process Same material is processed by four kettles in parallel (E, 434-045, A, 434-050; D, 434-051; and B 434-052)	1989 1979 1979 1986	None
EUF	Foams Reactors (10) Kit Reactors (431-064 and 089) Reactors V-25 (443-253) Three Reactors V-10 (431-062) V-1 (431-065) V-14 (431-066) Four Reactors V-11 (431-063) V-12 (431-082) V-19 (431-067) V-24 (443-251) Bag-Dump Station for V-11 IPA Still (411-105)	 1988 1973 1987 1973 1973 1973 1973 1973 1984 1973 1987 1973	 None None None None None Baghouse None
EUQU	Benzyl Quat Process Reactor (433-002), Filter and Precoat Tank	 1989	 None

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUPT	Prill Tower for Quat Process (665-004)		Scrubber (393-013) for both VOM and PM
EUAL	Alkoxylation Process R-1 Reactor (431-073) R-2 Reactor (431-011)		Scrubbers (391-069) and (391-070) in Series
EUFS	Fabric Softener Process R-3 Reactor (431-097) R-4 Reactor (421-104) R-5 Reactor (431-102)		Scrubbers (391-069) and (391-070) in Series
EUAS	Ashland Stripper (421-052)		None
EUOM	Onamer M Process Numerous Vessels and Condensers but Only Vent is through Scrubber		Wet Scrubber (205-506)
EUDF	Drum Filling		None
EULAL	LAL Process LAL Reactor (434-044)		Wet Scrubber (391-056)

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUD	Drying Processes Two Drum Dryers (652-003 and 652-005) Material Handling Spray Dryer (655-003) Two Cyclones (672-026 and 674-021) for Product Recovery		Venturi Scrubber (391-057) Baghouse (674-016) Venturi Scrubber (393-012) and Demister (196-031) in series Baghouse (674-020) and Demister (196-031) in Series
EUP	Batch Kettles (431-020, 421-064 and 421-067)) Used Intermittently		Combines with Polyol Vent to Catalytic Reactors
Section 7.3	Continuous Processes		
EUS	Sulfonation Units: E (431-057) F (431-080) G (431-069) H (431-088) I (431-081) J (431-096) G, H and J Units have Deaerators	 1974 1982 1985 1988 1987 1991	Packed Tower Scrubber (Dry) or KOH Scrubber and Demister on H and I Units Demisters only on all other units
EUBD	Biodiesel Processes: Recovering Methanol by Stripping from Glycerin EUBD-HR (421-043) w/Process Condenser --- (See also Section 7.2 for Batch Biodiesel Reactors)	2006	None (Process Condensers)

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUE	Esterification Unit (See also Batch Processes) Continuous Units Affected: Methanol Column (402-014), IPA Column (401-008) and Glycerine Stripper (401-009)	1973 1989 1997	None
EUH	Hydrotropes Unit (See also Batch Processes) Continuous Units Affected: Wash Columns #1 and #2 (403-001 and 002) and Xylene Recovery Kettles (421-108 and 434-003)	1986 1990 1990 1984	None
EUSME	Sulfonated Methyl Esters SME Reactor R2 (411-412)	1996	Vented to EUN Process (See Batch Processes, Section 7.2)
EUP	Polyol Unit Two Reactors 065 and 066 Vented Through Condensers to Phthalic Anhydride Catalytic Reactor (Afterburner) DEG Column 402-020 Azeotrope Column 402-023	1987 1988	PA Catalytic Reactors (Afterburner) (see Section 7.1) None None

See Section 7.4 (Storage Tanks) after Section 7.6 as a slightly different format was used.

Emission Unit	Description	Date Constructed	Maximum Firing Rate (mmBtu/hr)
Section 7.5	Fuel Combustion Devices		
EUIB-1	Gas-Fired Boiler #1	Before 1980	25
EUIB-2	Gas-Fired Boiler #2 Backup Fuel: Oil	Before 1980	25
EUIB-3	Gas Fired Boiler #3	Before 1980	53.5

Emission Unit	Description	Date Constructed	Maximum Firing Rate (mmBtu/hr)
EUIB-4	Gas-Fired Boiler #4R Backup Fuels: Distillate Oil and Biodiesel	2008	92
EUIB-5R	Gas-Fired Boiler #5R Backup Fuels: Distillate Oil and Biodiesel	2005	92
EUV-E2	Vaporizer E2	1989	14.4
EUV-PA1	Vaporizer PA1	1989	34.8
EUV-PA2, 3, and 4	Vaporizers Backup for PA1	1977	34.8
EUAH	Air Heater	Pre-1973	6.0
Section 7.6	Non-manufacturing operations		
EULS	Lime Silo (445-050)	1987	Loading: Filter (694-022) Unloading: Cyclone (674-025
EUP	Dry Para-Phthalic Acid Storage Silo and Slurry Mixing Tank	2006	Filter on each (silo and tank)
WWTP	Wastewater Treatment Plant including Equalization, Aeration Tanks, Clarifier and Sludge Tanks		None
CT	Cooling Towers (6)		None
UNL	SO_3 Unloading System		Absorber and Demister

Tank I.D. No.	Tank Equip. No.	Material	Year Built /Modified	Control Equipment
Section 7.4	Storage Tanks			
PA1	TK 445-038	Phthalic Anhydride (PA)	1977	None
ME1	TK 441-015	Methanol	Pre-1973	Scrubber S-102
ME2	TK 441-027	Methanol	Pre-1973	Scrubber S-102
ME3	TK 441-281	Methanol	Pre-1973	Scrubber S-102
ME4	TK 441-458	Methanol/DMAPA	1997/2005	Scrubber CDST-ME4 (S-150)
ME5	TK 441-421	Methanol/Water	1989	Scrubber S-102
ME6	TK 443-416	Methanol/Water	1989/2005	Scrubber CDST-ME4 (S-150)

Tank I.D. No.	Tank Equip. No.	Material	Year Built /Modified	Control Equipment
Section 7.4	Storage Tanks			
ME7	TK 441-422	Methanol/DMAPA	1989/2005	Scrubber CDST-ME4
ME8 ME111 ME132	TK 441-025 TK 443-139 TK 441-028	Methanol/Water Methanol/Catalyst Methanol/Product	Pre-73/05 Pre-1973 Pre-1973	Scrubber S-102 Scrubber S-102 Scrubber S-102
BD1	TK 422-199	Methanol	2005	Scrubber (CDST-BD, 393-023
BD2	TK 441-369	Methanol	2005	Scrubber (CDST-BD, 393-023
BD3	TK 443-017	Catalyst in Methanol	2005	Scrubber (CDST-BD, 393-023
BD4	TK 421-052	Glycerin	1987/2005	Scrubber (CDST-BD, 393-023
BD5	TK 441-368	Glycerin / Methanol	2006	Scrubber (CDST-BD, 393-023
BD6	TK 443-229	Glycerin / Methanol	2006	Scrubber (CDST-BD, 393-023
H1	TK 443-382	Xylene	1997	None
H2	TK 441-450	Xylene	1997	None
EPN-D	TK 441-451	Xylene	1997	None
EPN-A	TK 441-394	o-Xylene	1979	Yes
EPN-B	TK 441-365	o-Xylene	1977	Yes
AL-510	TK 422-012	Ethylene Oxide	Pre-1973	Scrubber
AL-511	TK 422-014	Ethylene Oxide	Pre-1973	Scrubber
AL-512	TK 422-013	Propylene Oxide	Pre-1973	Scrubber
AL-513	TK 422-015	Propylene Oxide	Pre-1973	Scrubber
ST-1	TK 424-006	Monochloracteic Acid	2006	Scrubber
ME102	TK 441-275	Methanol/Ester	Pre-1973	Scrubber S-105
ME103	TK 441-303	Methanol/Ester	Pre-1973	Scrubber S-105
ME104	TK 441-304	Methanol/Ester	Pre-1973	Scrubber S-105
ME105	TK 441-426	Methanol/Ester	1989	Scrubber S-105
ME109 ME113	TK 441-427 TK 445-067	Methanol/Glyc Methanol/Glyc	1989 1989	Scrubber S-105 Scrubber S-105
SME-328	TK 441-452	Methanol	1995	Scrubber S-339
AM859	TK 441-003	Methanol	Pre-1973	Scrubber S-859
AM860	TK 445-008	Methanol	1982	Scrubber S-859
AM864	TK 441-031	Methanol	Pre-1973	Scrubber S-859

5.0 OVERALL SOURCE CONDITIONS

5.1 Applicability of Clean Air Act Permit Program (CAAPP)

5.1.1 This permit is issued based on the source requiring a CAAPP permit as a major source of VOM, NO_x, SO_2, PM and HAP emissions.

5.2 Area Designation

This permit is issued based on the source being located in an area that, as of the date of permit issuance, is designated nonattainment for the National Ambient Air Quality Standards for VOM and $PM_{2.5}$ and attainment or unclassifiable for all other criteria pollutants (NO_x, CO, lead and SO_2).

5.3 Source-Wide Applicable Provisions and Regulations

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

5.3.2 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.

b. Pursuant to 35 IAC 212.123(a), 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, except as allowed by 35 IAC 212.123(b) and 212.124.

c. No person shall use any single or multiple compartment effluent water separator which receives effluent water containing 200 gal/day or more of organic material from any equipment processing, refining, treating, storing, or handling organic material unless such effluent water separator is equipped with air pollution control equipment capable of reducing by 85 percent or more the controlled organic material emitted to the atmosphere. Exception: If no odor nuisance exists the limitations of this subsection shall not apply if the vapor pressure of the organic material is below 2.5 psia (35 IAC 218.141).

d. No person shall cause or allow the discharge of more than 2 cu. in. of VOL with vapor pressure of 2.5 psia or greater at 70 F into the atmosphere from any pump or compressor in

any 15 minute period at standard conditions (35 IAC 218.142).

5.3.3 Fugitive Particulate Matter Operating Program

a. This source shall be operated under the provisions of an operating program prepared by the Permittee and submitted to the Illinois EPA for its review. Such operating program shall be designed to significantly reduce fugitive particulate matter emissions [35 IAC 212.309(a)]. The Permittee shall comply with the fugitive particulate matter operating program, submitted to the Illinois EPA and incorporated by reference into this permit, and any amendments to the program submitted pursuant to paragraph b below.

b. The operating program shall be amended from time to time by the Permittee so that the operating program is current. Such amendments shall be consistent with the requirements set forth by this Condition and shall be submitted to the Illinois EPA [35 IAC 212.312].

c. All normal traffic pattern roads and parking facilities located at this source shall be paved or treated with water, oils, or chemical dust suppressants. All paved areas shall be cleaned on a regular basis. All areas treated with water, oils, or chemical dust suppressants shall have the treatment applied on a regular basis, as needed, in accordance with the operating program [35 IAC 212.306].

5.3.4 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.

5.3.5 Risk Management Plan (RMP)

a. This stationary source, as defined in 40 CFR 68.3, is subject to 40 CFR Part 68, the federal regulations for

Chemical Accident Prevention. This condition is imposed in this permit pursuant to 40 CFR 68.215(a)(1).

b. The owner or operator of a stationary source shall revise and update the RMP submitted pursuant to 40 CFR 68.150, as specified in 40 CFR 68.190.

5.3.6 Future Emission Standards

a. Should this stationary source become subject to a new or revised regulation under 40 CFR Parts 60, 61, 62, or 63, or 35 IAC Subtitle B 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 Condition 9.8. This permit may also have to be revised or reopened to address such new or revised regulations (see Condition 9.12.2).

b. This permit and the terms and conditions herein do not affect the Permittee’s past and/or continuing obligation with respect to statutory or regulatory requirements governing major source construction or modification under Title I of the CAA. Further, neither the issuance of this permit nor any of the terms or conditions of the permit shall alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.

5.3.7 Episode Action Plan

a. Pursuant to 35 IAC 244.141, 244.142, and 244.143, 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 and is incorporated by reference into this permit.

b. The Permittee shall immediately implement the appropriate steps described in this plan should an air pollution alert or emergency be declared by the Director of the Illinois EPA or his or her designated representative.

c. If an operational change occurs at the source which invalidates the plan, a revised plan shall be submitted to the Illinois EPA for review within 30 days of the change, pursuant to 35 IAC 244.143(d). Such plans shall be further revised if disapproved by the Illinois EPA.

5.3.8 PM_{10} Contingency Measure Plan

Should this stationary source meets the criteria in 35 IAC 212.700 it will be required to prepare and submit a contingency measure plan reflecting the PM_{10} emission reductions as set forth in 35 IAC 212.701 and 212.703. The plan submitted to the Illinois EPA is incorporated by reference into this permit and shall be implemented by the Permittee in accordance with 35 IAC 212.704 following notification by the Illinois EPA. The source shall comply with the applicable requirements of 35 IAC Part 212, Subpart U.

5.3.9 NESHAP Requirements (MON)

a. The final rule for Miscellaneous Organic Chemical Manufacturing under the NESHAP, 40 CFR 63 Subpart FFFF (40 CFR 63.2430 through 63.2550 plus Tables) was published on November 10, 2003. The final compliance date was May 10, 2008. The standard only applies to units that use or produce HAPs.

b. There are a number of specific standards contained within the general rule. See the following sections for those rules:

- Section 7.2 for batch process vents requirements
- Section 7.3 for continuous process vents requirements
- Section 7.4 for storage tank requirements
- Section 7.6 for wastewater treatment provisions

In addition to the regular standards, there are options for pollution prevention standards, emissions averaging and for an alternative standard.

c. As of the dates required by the rule, the Permittee shall comply with the following:

i. The notification requirements of 40 CFR 63.2515 and the applicable requirements in 40 CFR Subpart A (63.7 to 63.9).

ii. The recordkeeping requirements of 40 CFR 63.2525.

iii. The reporting requirements of 40 CFR 63.2520.

d. The chemical manufacturing process units that emit HAPs are also subject to the general requirements 40 CFR 63 Subpart A (§63.1 to 63.15). One of these requirements for units that comply by use of control equipment is to have a Startup, Shutdown and Malfunction Plan as required by 40 CFR 63.6(e)(3).

e. This NESHAP rule was described here in Section 5 but the actual equipment affected is in Section 7. The Permittee

has identified the following processes in Section 7 that will be affected by this rule. The specific section is in parenthesis after the unit name.

Sulfonation (EUS, 7.3)
Toximuls (EUTOX, 7.2)
Neutralization (EUN, 7.2)
Amides (EUAM, 7.2)
Biodiesel (EUBD, 7.2 and 7.3)
Esterification (EUE, 7.2 and 7.3)
Hydrotropes (EUH, 7.2 and 7.3)
SME (EUSME, 7.3)
Foam (EUF, 7.2)
Quats (EUQ, 7.2)
Prill Tower (EUPT, 7.2)
Fabric Softener (EUFS, 7.2)
Ashland Stripper (EUAS, 7.2)
Polyol (EUP, 7.2 and 7.3)
Phthalic Anhydride Batch Residue Column (EUPA, 7.1)
Onamer M (EUOM, 7.2)
LAL Reactor (EULAL, 7.2)
Plus some insignificant emissions units, storage tanks, and fugitive emissions.

The specific requirements are listed in the appropriate section.

f. The Permittee shall certify compliance with the applicable requirements of Subpart FFFF as part of the annual compliance certification required by 40 CFR Part 70 or 71 beginning in the year that compliance is required (2008).

5.4 Source-Wide Non-Applicability of Regulations of Concern

a. The following units are exempted from LDAR testing pursuant to 35 IAC 218 Subpart Q either because the units are not considered SOCMI units (i.e., not in Appendix A of 35 IAC 218) or because the vapor pressure of the liquids classify them as heavy liquids pursuant to the definition in 35 IAC 211.2870. Note that this does not exempt these units from possible applicability of LDAR testing pursuant to the MON.

Unit Abbreviation	Process
EUIB	Boilers
EUS	Sulfonation
EUN	Neutralization
EUTOX	Toximuls
EUAM	Amides
EUE	Esterification
EUH	Hydrotropes
EUF	Foam
EUQ	Quats

Unit Abbreviation	Process
EUAL	Alkoxylation
EUFS	Fabric Softener
EUP	Polyol
EUPA	Phthalic Anhydride (Product Side Only)
EUDF	Drum Filling
EULAL	LAL Reactor
EUD	Drying

b. The Federal Implementation Plan RACT regulations for VOC promulgated by the United States Environmental Protection Agency on June 29, 1990 was revoked as applied to Stepan on April 16, 1999 (64 FR 18816-01) by a direct final rule now codified as 40 CFR 52.726(t) which became effective June 15, 1999.

5.5 Source-Wide Control Requirements 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:

All new products manufactured in equipment included in the permit shall undergo an environmental review such as the Permittee's "Experimental Production Request" review (known as an EPR or P-com) or any such future review process that may be developed to verify that the emissions shall comply with the applicable rules.

5.6 Source-Wide Production and Emission Limitations

5.6.1 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 5.6.1) are set for the purpose of establishing fees and are not federally enforceable (see Section 39.5(18) of the Act).

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Volatile Organic Material (VOM)	511
Sulfur Dioxide (SO_2)	236
Particulate Matter (PM)	94
Nitrogen Oxides (NO_x)	110
HAP, not included in VOM or PM	1
Total	952

5.6.2 Emissions of Hazardous Air Pollutants

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.

5.6.3 Other Source-Wide Production and Emission Limitations

Various construction permits included negligible emissions conditions, that is, less than 0.1 lb/hr and 0.44 ton/year emissions. If the equipment is now included as an insignificant emission unit (e.g. storage tanks), the negligible conditions are not included in this permit but the Permittee must comply with the Title 1 conditions of previously issued construction permits.

Other source-wide emission limitations are not set for this source pursuant to the federal rules for PSD, state rules for MSSCAM, or Section 502(b)(10) of the CAA. However, there are unit specific emission limitations set forth in Section 7 of this permit pursuant to these rules.

5.7 Source-Wide Testing Requirements

5.7.1 Pursuant to 35 IAC 201.282 and Section 4(b) of the Act, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:

a. Testing by Owner or Operator: The Illinois EPA may require the owner or operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the Illinois EPA, at such reasonable times as may be specified by the Illinois EPA and at the expense of the owner or operator of the emission source or air pollution control equipment. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The Illinois EPA shall have the right to observe all aspects of such tests [35 IAC 201.282(a)].

b. Testing by the Illinois EPA: The Illinois EPA shall have the right to conduct such tests at any time at its own expense. Upon request of the Illinois EPA, the owner or operator of the emission source or air pollution control equipment shall provide, without charge to the Illinois EPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary [35 IAC 201.282(b)].

c. Any such tests are also subject to the Testing Procedures of Condition 8.5 set forth in the General Permit Conditions of Section 8.

5.8 Source-Wide Monitoring Requirements

Source-wide monitoring requirements are not set for this source. However, there are provisions for unit specific monitoring set forth in Section 7 of this permit.

5.9 Source-Wide Recordkeeping Requirements

5.9.1 Annual Emission Records

The Permittee shall maintain records of total annual emissions on a calendar year basis for the emission units covered by Section 7 (Unit Specific Conditions for Specific Emission Units) of this permit to demonstrate compliance with Condition 5.6.1, pursuant to Section 39.5(7)(b) of the Act.

5.9.2 Records for Source-Wide Control Requirements and Work Practices

The Permittee shall keep copy of the fugitive particulate matter operating plan, and any amendments to the plan, as required by Condition 5.3. The Permittee shall also keep a record of activities completed according to the plan.

5.9.3 Records for HAP Emissions

The Permittee shall maintain records of HAP emissions on a calendar year basis for the emission units covered by Section 7 (Unit Specific Conditions for Specific Emission Units) of this permit, pursuant to Section 39.5(7)(b) of the Act.

a. The Permittee shall maintain records of individual and combined HAP emissions on a monthly and annual basis for the emission units covered by Section 7 (Unit Specific Conditions for Specific Emission Units) of this permit to demonstrate compliance with Condition 5.6.2, pursuant to Section 39.5(7)(b) of the Act.

b. If testing is required by Condition 5.7.1, the Permittee shall keep records of the testing, including the test date, conditions, methodologies, calculations, test results, and any discrepancies between the test results and formulation specifications of Condition 5.9.12(d) below.

5.9.4 Records Verifying Nonapplicability

a. In Condition 5.4 above it is stated that various processes are not subject to the leak testing requirements of 35 IAC 218 Subpart Q for several possible reasons. The Permittee shall keep records to verify that those processes continue

to meet the basis for nonapplicability of Subpart Q, i.e. that the process is not in Appendix A of Part 218 or that the material is a heavy liquid.

5.9.5 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.

5.10 Source-Wide Reporting Requirements

5.10.1 General Source-Wide Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of the source with the permit requirements within 30 days, 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. There are also reporting requirements for unit specific emission units set forth in Section 7 of this permit.

5.10.2 Changes in Nonapplicability

The Permittee shall notify the Illinois EPA if a discovery is made that any of the reasons for nonapplicability stated in Condition 5.4 or in the various nonapplicability parts of Section 7 are no longer valid, within 30 days of such discovery or notification prior to the change that a rule previously not applicable will become applicable.

5.10.3 Annual Emissions Report

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

5.11 Source-Wide Operational Flexibility/Anticipated Operating Scenarios

Source-wide operational flexibility is not set for this source. However, there are provisions for unit specific operational flexibility set forth in Section 7 of this permit.

5.12 Source-Wide Compliance Procedures

5.12.1 Procedures for Calculating Emissions

Except as provided in Condition 9.1.3, compliance with the source-wide emission limits specified in Condition 5.6 shall be addressed by the testing, recordkeeping and reporting requirements of Conditions 5.7, 5.9 and 5.10, and compliance procedures in Section 7 (Unit Specific Conditions for Specific Emission Units) of this permit.

a. For the purpose of estimating VOM emissions from the storage tanks, the current version of the USEPA tanks program is acceptable.

b. For the purpose of estimating fugitive VOM emissions from valves and components at the source, the same emission factors used in the ERMS emission baseline must be used.

c. For the purpose of calculating VOM emissions from the chemical manufacturing processes, the same methodology shall be used as used in the ERMS baseline determination except as specified in Condition 7.2.12(b).

d. For the purpose of estimating HAP emissions from equipment at the source, the vapor weight percent (based on a 1992 USEPA survey) of each HAP for each product times the VOM emissions contributed by that product is acceptable. The approach used to determine the HAP emissions in the CAAPP application and in the MON Notice of Compliance status is also acceptable.

6.0 CONDITIONS FOR EMISSIONS CONTROL PROGRAMS

6.1 Emissions Reduction Market System (ERMS)

6.1.1 Description of ERMS

The ERMS is a “cap and trade” market system for major stationary sources located in the Chicago ozone nonattainment area. It is designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as required by Section 182(c) of the CAA.

The ERMS addresses VOM emissions during a seasonal allotment period from May 1 through September 30. Participating sources must hold “allotment trading units” (ATUs) for their actual seasonal VOM emissions. Each year participating sources are issued ATUs based on allotments set in the sources’ CAAPP permits. These allotments are established from historical VOM emissions or “baseline emissions” lowered to provide the emissions reductions from stationary sources required for reasonable further progress.

By December 31 of each year, the end of the reconciliation period following the seasonal allotment period, each source shall have sufficient ATUs in its transaction account to cover its actual VOM emissions during the preceding season. A transaction account’s balance as of December 31 will include any valid ATU transfer agreements entered into as of December 31 of the given year, provided such agreements are promptly submitted to the Illinois EPA for entry into the transaction account database. The Illinois EPA will then retire ATUs in sources’ transaction accounts in amounts equivalent to their seasonal emissions. When a source does not appear to have sufficient ATUs in its transaction account, the Illinois EPA will issue a notice to the source to begin the process for Emissions Excursion Compensation.

In addition to receiving ATUs pursuant to their allotments, participating sources may also obtain ATUs from the market, including ATUs bought from other participating sources and general participants in the ERMS that hold ATUs (35 IAC 205.630) and ATUs issued by the Illinois EPA as a consequence of VOM emissions reductions from an Emissions Reduction Generator or an Intersector Transaction (35 IAC 205.500 and 35 IAC 205.510). During the reconciliation period, sources may also buy ATUs from a secondary reserve of ATUs managed by the Illinois EPA, the “Alternative Compliance Market Account” (ACMA) (35 IAC 205.710). Sources may also transfer or sell the ATUs that they hold to other sources or participants (35 IAC 205.630).

6.1.2 Applicability

This source is considered a “participating source” for purposes of the ERMS, 35 IAC Part 205.

6.1.3 Obligation to Hold Allotment Trading Units (ATUs)

a. Pursuant to 35 IAC 205.150(c)(1) and 35 IAC 205.720, and as further addressed by Condition 6.1.8, as of December 31 of each year, this source shall hold ATUs in its account in an amount not less than the ATU equivalent of its VOM emissions during the preceding seasonal allotment period (May 1 - September 30), not including VOM emissions from the following, or the source shall be subject to “emissions excursion compensation,” as described in Condition 6.1.5.

   i. VOM emissions from insignificant emission units and activities as identified in Section 3 of this permit, in accordance with 35 IAC 205.220;

   ii. Excess VOM emissions associated with startup, malfunction, or breakdown of an emission unit as authorized in Section 7.0 of this permit, in accordance with 35 IAC 205.225;

   iii. Excess VOM emissions to the extent allowed by a Variance, Consent Order, or Compliance Schedule, in accordance with 35 IAC 205.320(e)(3);

   iv. Excess VOM emissions that are a consequence of an emergency as approved by the Illinois EPA, pursuant to 35 IAC 205.750; and

   v. VOM emissions from certain new and modified emission units as addressed by Condition 6.1.8(b), if applicable, in accordance with 35 IAC 205.320(f).

b. Notwithstanding the above condition, in accordance with 35 IAC 205.150(c)(2), if a source commences operation of a major modification, pursuant to 35 IAC Part 203, the source shall hold ATUs in an amount not less than 1.3 times its seasonal VOM emissions attributable to such major modification during the seasonal allotment period, determined in accordance with the construction permit for such major modification or applicable provisions in Section 7.0 of this permit.

6.1.4 Market Transactions

a. The source shall apply to the Illinois EPA for and obtain authorization for a Transaction Account prior to conducting any market transactions, as specified at 35 IAC 205.610(a).

b. The Permittee shall promptly submit to the Illinois EPA any revisions to the information submitted for its Transaction Account, pursuant to 35 IAC 205.610(b).

c. The source shall have at least one account officer designated for its Transaction Account, pursuant to 35 IAC 205.620(a).

d. Any transfer of ATUs to or from the source from another source or general participant must be authorized by a qualified Account Officer designated by the source and approved by the Illinois EPA, in accordance with 35 IAC 205.620, and the transfer must be submitted to the Illinois EPA for entry into the Transaction Account database.

6.1.5 Emissions Excursion Compensation

Pursuant to 35 IAC 205.720, if the source fails to hold ATUs in accordance with Condition 6.1.3, it shall provide emissions excursion compensation in accordance with the following:

a. Upon receipt of an Excursion Compensation Notice issued by the Illinois EPA, the source shall purchase ATUs from the ACMA in the amount specified by the notice, as follows:

   i. The purchase of ATUs shall be in an amount equivalent to 1.2 times the emissions excursion; or

   ii. If the source had an emissions excursion for the seasonal allotment period immediately before the period for the present emissions excursion, the source shall purchase ATUs in an amount equivalent to 1.5 times the emissions excursion.

b. If requested in accordance with paragraph (c) below or in the event that the ACMA balance is not adequate to cover the total emissions excursion amount, the Illinois EPA will deduct ATUs equivalent to the specified amount or any remaining portion thereof from the ATUs to be issued to the source for the next seasonal allotment period.

c. Pursuant to 35 IAC 205.720(c), within 15 days after receipt of an Excursion Compensation Notice, the owner or operator may request that ATUs equivalent to the amount specified be deducted from the source’s next seasonal allotment by the Illinois EPA, rather than purchased from the ACMA.

6.1.6 Quantification of Seasonal VOM Emissions

a. The methods and procedures specified in Sections 5 and 7 of this permit for determining VOM emissions and compliance with VOM emission limitations shall be used for determining seasonal VOM emissions for purposes of the ERMS, with the following exceptions [35 IAC 205.315(b)]:

   No exceptions

b. The Permittee shall report emergency conditions at the source to the Illinois EPA, in accordance with 35 IAC 205.750, if the Permittee intends to deduct VOM emissions in excess of the technology-based emission rates normally achieved that are attributable to the emergency from the source's seasonal VOM emissions for purposes of the ERMS. These reports shall include the information specified by 35 IAC 205.750(a), and shall be submitted in accordance with the following:

i. An initial emergency conditions report within two days after the time when such excess emissions occurred due to the emergency; and

ii. A final emergency conditions report, if needed to supplement the initial report, within 10 days after the conclusion of the emergency.

6.1.7 Annual Account Reporting

a. For each year in which the source is operational, the Permittee shall submit, as a component of its Annual Emissions Report, seasonal VOM emissions information to the Illinois EPA for the seasonal allotment period. This report shall include the following information [35 IAC 205.300]:

i. Actual seasonal emissions of VOM from the source;

ii. A description of the methods and practices used to determine VOM emissions, as required by this permit, including any supporting documentation and calculations;

iii. A detailed description of any monitoring methods that differ from the methods specified in this permit, as provided in 35 IAC 205.337;

iv. If a source has experienced an emergency, as provided in 35 IAC 205.750, the report shall reference the associated emergency conditions report that has been approved by the Illinois EPA;

v. If a source's baseline emissions have been adjusted due to a Variance, Consent Order, or CAAPP permit Compliance Schedule, as provided for in 35 IAC 205.320(e)(3), the report shall provide documentation quantifying the excess VOM emissions during the season that were allowed by the Variance, Consent Order, or Compliance Schedule, in accordance with 35 IAC 205.320(e)(3); and

vi. If a source is operating a new or modified emission unit for which three years of operational data is not

yet available, as specified in 35 IAC 205.320(f), the report shall specify seasonal VOM emissions attributable to the new emission unit or the modification of the emission unit.

b. This report shall be submitted by November 30 of each year, for the preceding seasonal allotment period.

6.1.8 Allotment of ATUs to the Source

a. i. The allotment of ATUs to this source is 1,594 ATUs per seasonal allotment period.

ii. This allotment of ATUs reflects the Illinois EPA's determination that the source's baseline emissions were 173.493 tons per season.

iii. The source's allotment reflects 88% of the baseline emissions (12% reduction), except for the VOM emissions from specific emission units excluded from such reduction, pursuant to 35 IAC 205.405, including units complying with MACT or using BAT, as identified in Condition 6.1.10 of this permit.

iv. ATUs will be issued to the source's Transaction Account by the Illinois EPA annually. These ATUs will be valid for the seasonal allotment period following issuance and, if not retired in this season, the next seasonal allotment period.

b. Contingent Allotments for New or Modified Emission Units

None

c. Notwithstanding the above, part or all of the above ATUs will not be issued to the source in circumstances as set forth in 35 IAC Part 205, including:

i. Transfer of ATUs by the source to another participant or the ACMA, in accordance with 35 IAC 205.630;

ii. Deduction of ATUs as a consequence of emissions excursion compensation, in accordance with 35 IAC 205.720; and

iii. Transfer of ATUs to the ACMA, as a consequence of shutdown of the source, in accordance with 35 IAC 205.410.

6.1.9 Recordkeeping for ERMS

The Permittee shall maintain copies of the following documents as its Compliance Master File for purposes of the ERMS [35 IAC 205.700(a)]:

a. Seasonal component of the Annual Emissions Report;

b. Information on actual VOM emissions, as specified in detail in Sections 5 and 7 of this permit and Condition 6.1.6(a); and

c. Any transfer agreements for the purchase or sale of ATUs and other documentation associated with the transfer of ATUs.

6.1.10 Exclusions from Further Reductions

a. VOM emissions from the following emission units shall be excluded from the VOM emissions reductions requirements specified in 35 IAC 205.400(c) and (e) as long as such emission units continue to satisfy the following [35 IAC 205.405(a)]:

i. Emission units that comply with any NESHAP or MACT standard promulgated pursuant to the CAA;

ii. Direct combustion emission units designed and used for comfort heating purposes, fuel combustion emission units, and internal combustion engines; and

iii. An emission unit for which a LAER demonstration has been approved by the Illinois EPA on or after November 15, 1990.

The source has demonstrated in its ERMS application and the Illinois EPA has determined that the following emission units qualify for exclusion from further reductions because they meet the criteria as indicated above [35 IAC 205.405(a) and (c)]:

Boilers (EUIB)
Vaporizers (EUV)
Some Fugitives under MACT (EUPA)

b. VOM emissions from emission units using BAT for controlling VOM emissions shall not be subject to the VOM emissions reductions requirement specified in 35 IAC 205.400(c) or (e) as long as such emission unit continues to use such BAT [35 IAC 205.405(b)].

The source has demonstrated in its ERMS application and the Illinois EPA has determined that the following emission units qualify for exclusion from further reductions because these emission units use BAT for controlling VOM emissions as indicated above [35 IAC 205.405(b) and (c)]:

None

7.0 UNIT SPECIFIC CONDITIONS FOR SPECIFIC EMISSION UNITS

7.1 Unit: Air Oxidation Process (Phthalic Anhydride)

7.1.1 Description

The reaction phase (in vessels called converters) which produces phthalic anhydride (PA, a VOM and a HAP) is an air oxidation process, that is the partial oxidation of an organic material (in this case o-xylene, also a VOM and HAP) in the presence of a catalyst. Some undesirable side products are also formed. The reaction and pretreating phases of the process are subject to rules for air oxidation processes, but later purification steps of the process are subject to rules for continuous processes or batch processes. The condensers used in the various stages of the purification steps are material recovery devices rather than control equipment, although they do reduce emissions. SO_2 may be used to maintain catalyst activity. The converters do not vent directly to the control device, but first to switch condensers where product is condensed and then to three afterburners, referred to as catalytic reactors by the Permittee. During startup, shutdown or malfunction, the catalytic reactors may be bypassed.

The function of the pre-distillation column is to remove lite end impurities. In the distillation column the product exits the top while high boiling residue exits the bottom of the column.

A final product tank is included in Section 7.4, storage tanks for the source. This phthalic anhydride tank is maintained at an elevated temperature as liquid. The final product may be a solid in flake form, formed in three flakers which are controlled by a baghouse, or shipped as a liquid in heated tank cars or tank trucks.

Note: This narrative description is for informational purposes only and is not enforceable.

7.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Date Constructed	Emission Control Equipment
422-217, 422-227, 422-228, 422-283	Four Parallel Converters (Reactors)	1977 1979 1979 1998	Three Catalytic Reactors[a] (435-003 to 005)
421-030 421-031	Parallel[b] Pretreaters	1983 1990	

Emission Unit	Description	Date Constructed	Emission Control Equipment
401-006	Pre-Distillation Column with Material Recovery Condenser (411-174)	1979	None
401-005	Main Distillation Column with Material Recovery Condenser (411-173)	1979	None
431-019	Batch Residue Column with Material Recovery Condenser (411-139)[c]	1979	Secondary Vent to Pretreaters
656-003, 656-006, & 007	Three Flakers, Residue Drumming and T/C Loading	1981	Baghouse
Fugitive Emissions			Leak Detection and Repair Program

[a] Polyol reactors (see Section 7.3) also vent to this control equipment.

[b] There are fourteen switch condensers between the converters and pretreaters but they vent to the catalytic reactors.

[c] Identified by the Permittee as a Group 2 vessel according to the definition in 40 CFR 63.2550 [see Condition 7.1.4(f)].

7.1.3 Applicable Provisions and Regulations

a. The “affected air oxidation process” for the purpose of these unit-specific conditions, is a process in which air or a combination of air and oxygen in combination with one or more organic materials to produce one or more organic compounds and is described in Conditions 7.1.1 and 7.1.2.

b. Air Oxidation Rule

Only the four converters listed in Condition 7.1.2 that are vented to the catalytic reactors are subject to the air oxidation rule, but since the pretreaters vent to the same control device, those emissions are included in determining compliance with the air oxidation rule. This rule (35 IAC 218.520(a)) states that no person shall cause or allow the emission of VOM from any process vent stream unless the process vent stream is vented to a combustion device which is designed and operated either:

i. To reduce the volatile organic emissions vented to it with an efficiency of at least ninety eight percent (98%) by weight; or

ii. To emit VOM at a concentration less than twenty parts per million by volume, dry basis.

c. Carbon Monoxide And Sulfur Dioxide Rules

The following rules for CO and SO_2 emissions only apply to the converters, that is the equipment vented through the afterburner (three catalytic reactors), as they are the only units capable of emitting CO and SO_2:

i. No person shall cause or allow the emission of any gases containing CO into the atmosphere from any polybasic organic acid partial oxidation manufacturing process unless the total fuel value of the waste gas stream is less than 30 percent of that required for flame incineration of the waste gas stream at 793 C (1460 F) without heat exchange. Polybasic organic acid partial oxidation manufacturing processes not meeting the above conditions shall burn such waste gas stream in a direct flame afterburner to achieve a resulting concentration of carbon monoxide in such waste gas stream of less than or equal to 200 ppm or shall employ such other equivalent control method or equipment as may be approved by the Illinois EPA according to the provisions of 35 IAC 201 (35 IAC 216.362).

ii. No person shall cause or allow the emissions of SO_2 into the atmosphere from any process emission unit to exceed 2,000 ppm (35 IAC 214.301).

d. Use of Organic Material Rule

The Permittee shall not cause or allow the discharge of more than 8 lb/hr of organic material into the atmosphere from any emission unit except as provided by Section 218.302. If no odor nuisance exists the limitation shall apply only to photochemically reaction reactive material pursuant to the definition in 35 IAC 211.4690. Section 218.302 allows the emissions to exceed 8 lb/hr if they are controlled by an afterburner or vapor recovery system which absorbs or condenses 85% of the uncontrolled organic material [35 IAC 218.301 and 218.302].

e. HON rule

The four converters and pretreaters, pre-distillation column, and main distillation column are subject to the HON rule, 40 CFR 63 Subparts A, F, G, and H. Only the process

control technology and leak detection requirements will be discussed here and in Condition 7.1.3(f). Storage tank and wastewater provisions are discussed in Condition 7.4 and 7.6. Only the actual control provisions that the Permittee has chosen to comply with will be cited. For instance, the Permittee uses a catalytic afterburner as the control device for the converters and pretreaters so alternative technologies such as flares or scrubber will not be listed.

i. For the converters and pretreaters the Permittee shall comply with the following:

   Reduce emissions of total organic hazardous air pollutants by 98 weight percent or to a concentration of 20 parts per million by volume, whichever is less stringent. For combustion devices, the emission reduction or concentration shall be calculated on a dry basis, corrected to 3-percent oxygen, and compliance can be determined by measuring either organic hazardous air pollutants or total organic carbon using the procedures in Section 63.116 of this Subpart [40 CFR 63.113(a)(2)].

ii. For the pre-distillation and main distillation columns, the Permittee shall comply with the following:

   Achieve and maintain a TRE index value greater than 1.0 at the outlet of the final recovery device, or prior to release of the vent stream to the atmosphere if no recovery device is present. If the TRE index value is greater than 1.0, the vent shall comply with the provisions for a Group 2 process vent [40 CFR 63.113(a)(3)].

   Note: Section 7.1.8(g) exempts these units from monitoring since the TRE is above 4.0. The calculation procedure for TRE is in 40 CFR 63.115(d)(3) with the coefficients in Table 2 of 40 CFR 63 Subpart G.

iii. Startup, Shutdown and Malfunction (SSM) Plan

   The Permittee is required to have a written Startup, Shutdown and Malfunction (SSM) Plan for the PA converters and the three catalytic reactors on site under 40 CFR 63.6(e)(3).

   The SSM Plan at the site and any revision to that plan is incorporated by reference and is enforceable as a term and condition of this permit.

Revisions to the SSM Plan are automatically incorporated by reference and do not require a permit revision.

f. Leak Rules

i. The entire phthalic anhydride process is subject to 40 CFR 63 Subpart H for equipment leaks (LDAR). However, only the process valves, pumps and other components that contain the raw material o-xylene are subject to the requirements since the product is a heavy liquid and not a light liquid.

ii. The phthalic anhydride process is also subject to 35 IAC 218 Subpart Q, LDAR from synthetic organic chemical manufacturing plants. The definition of light liquid is the same as the HON leak rule just discussed so the same exemption applies for the product.

g. 35 IAC 218, Subpart Q

The pre-distillation and main distillation column are subject to the rule for continuous distillation and reactor process emission units for synthetic organic chemical manufacturing plants (35 IAC 218, Subpart Q). This source is specifically cited for applicability in 35 IAC 218.431(a)(2). The control requirement that the Permittee employs for compliance is 35 IAC 218.432(c) which states that for each individual vent stream within a chemical manufacturing process unit with a TRE index value greater than 1.0, the owner or operator shall maintain process vent stream parameters that retain a calculated TRE index value greater than 1.0 by means of recovery. Any recovery device shall have as its primary purpose the capture of chemicals for use, reuse, or sale. The TRE index value shall be calculated at the outlet of the final recovery device. The TRE calculation procedure is described in 35 IAC 218 Appendix G.

h. Batch Residue Column

i. The batch residue column is also subject to the MON rule, 40 CFR 63 Subparts A and FFFF. See Condition 7.1.4(i)(i) for reasons the unit is exempt from the control requirements of the rule.

ii. The batch residue column is subject to 35 IAC 218 Subpart V. See Condition 7.1.4(i)(ii) for reasons the unit is exempt from the control requirements of the rule.

i. PM and Opacity Rules

i. The three affected flakers are subject to 35 IAC 212.321(a). The Permittee shall not cause or allow the emission of PM into the atmosphere in any one hour period which, either alone or in combination with the emission of particulate matter from all similar process emission units to exceed the allowable emission rates calculated by the method specified in Attachment 2.

Note that since all three flakers are vented to the same piece of control equipment, the process weight rate is determined by the rate for the three units combined.

ii. The three affected flakers are subject to 35 IAC 212.123. Pursuant to 35 IAC 212.123(a), 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, except as allowed by 35 IAC 212.123(b) and 212.124.

j. Startup Provisions

Subject to the following terms and conditions, the Permittee is authorized to operate an affected converters in violation of the applicable standards in Condition 7.1.3(b)(i), (c)(i) and (d) during startup. This authorization is provided pursuant to 35 IAC 201.149, 201.161 and 201.262, as the Permittee has applied for such authorization in its application, generally describing the efforts that will be used "…to minimize startup emissions, duration of individual starts, and frequency of startups."

i. This authorization does not relieve the Permittee from the continuing obligation to demonstrate that all reasonable efforts are made to minimize startup emissions, duration of individual startups and frequency of startups.

ii. The Permittee shall conduct startup of the four converters in accordance with written procedures prepared by the Permittee and maintained for the PA process (see SS&M plan above), that are specifically developed to minimize emissions from startups and that include, at a minimum, the following measures:

A. This authorization only extends for a period of up to one hour following initial firing of fuel during each startup event.

B. The Permittee shall take the following measures to minimize the emissions, duration and frequency of startups:

1. Implementation of established startup procedures, including venting the vapor stream to the afterburners as soon as safety allows.

2. Minimizing the frequency of startups.

C. The Permittee shall conduct startup of the affected converters in accordance with the manufacturer's written instructions or other written instructions (the SS&M Plan required by the NESHAP Subpart A) prepared by the Permittee and maintained on site.

iii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Condition 7.1.9 (g)and 7.1.10(d).

iv. As provided by 35 IAC 201.265, an authorization in a permit for excess emissions during startup does not shield a Permittee from enforcement for any violation of applicable emission standard(s) that occurs during startup and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

v. This provision does not address startup in relation to the HON rule, Condition 7.1.3(e). The SS&M Plan in Condition 7.1.3(e)(iii) must be followed.

k. Malfunction and Breakdown Provisions

Subject to the following terms and conditions, the Permittee is authorized to continue operation of an affected converters in violation of the applicable standards in Conditions 7.1.3(b)(i), (c)(i) and (d) in the event of a malfunction or breakdown of the catalytic reactors. This authorization is provided pursuant to 35 IAC 201.149, 201.161 and 201.262, as the Permittee has applied for such authorization in its application, generally explaining why such continued operation would be required to provide essential service or to prevent risk of injury to personnel or severe damage to equipment, and describing the measures that will be taken to minimize emissions from any malfunctions and breakdowns. This authorization supersedes the general prohibition in Condition 9.2.3 against continued operation in such circumstances.

i. This authorization only allows such continued operation as necessary to provide essential service or prevent risk of injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.

ii. Upon occurrence of excess emissions due to malfunction or breakdown of one of the catalytic reactors, the Permittee shall as soon as practical divert the flow to the remaining operable catalytic reactors, repair the inoperable catalytic reactor, or remove the affected converters that cannot be diverted to operable catalytic reactors from service or undertake other action so that excess emissions cease.

iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.1.9(h)and 7.1.10(c)(ii). For these purposes, time shall be measured from the start of a particular incident. The absence of excess emissions for a short period shall not be considered to end the incident if excess emissions resume. In such circumstances, the incident shall be considered to continue until corrective actions are taken so that excess emissions cease or the Permittee takes the affected converters out of service.

iv. Following notification to the Illinois EPA of a malfunction or breakdown with excess emissions, the Permittee shall comply with all reasonable directives of the Illinois EPA with respect to such incident, pursuant to 35 IAC 201.263.

v. This authorization does not relieve the Permittee from the continuing obligation to minimize excess emissions during malfunction or breakdown. As provided by 35 IAC 201.265, an authorization in a permit for continued operation with excess emissions during malfunction and breakdown does not shield the Permittee from enforcement for any such violation and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

vi. This provision does not address malfunction and breakdown in relation to the HON rule, Condition 7.1.3(e). The SS&M Plan in Condition 7.1.3(e)(iii) must be followed.

7.1.4 Non-Applicability of Regulations of Concern

a. The batch residue column and three flakers are not subject to the HON rule, 40 CFR 63 Subparts F, G, and H because the rule only applies to process vents that continuously discharge from a reactor or distillation unit and the batch residue column is not continuous unit and the flakers are not reactors or distillation units (40 CFR 60.101).

b. The phthalic anhydride process is not subject to the following NSPS [40 CFR 60 Subparts III (SOCMI Distillation), NNN (SOCMI Distillation Operations) and RRR (SOCMI Reactors)], because they are subject to both the NSPS and the NESHAP and hence only required to comply with the NESHAP.

c. All of the affected units identified in Condition 7.1.2 are not subject to 35 IAC 218 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes because 35 IAC 218.960(a)(1) and (b)(1)(A) both state that emission units that are regulated by 218 Subpart Q and Subpart V are not regulated by Subpart RR. All of these units are regulated by Subpart V or Q.

d. The affected catalytic reactors are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources for HAP emissions, because the affected catalytic reactors are subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i). While the converters could be subject to CAM for VOM emissions, the same control device (a catalytic afterburner)is used for control of the VOM as for the HAP and thus the NESHAP monitoring required by Condition 7.1.8 are equivalent to any requirements under the CAM program.

e. The affected distillation columns are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected distillation columns do not use an add-on control device to achieve compliance with an emission limitation or standard.

f. The affected batch residue column is not subject to 40 CFR 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources for HAPs, because the affected batch residue column is subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i).

g. The affected flakers are not subject to 40 CFR 63 Subpart G, because the affected flakers emit phthalic anhydride in particulate (PM) form and not in gaseous form and Subpart G only regulates HAPs in gaseous form (40 CFR 63.107).

h. 35 IAC 218.520 lists three methods to comply with the rule. As stated above in Condition 7.1.3(b), the Permittee

complies using §218.520(a). §218.520(b) and (c) are not employed for compliance by the Permittee and therefore are not applicable.

i. Exemptions from Control Requirements

i. In the list of emission units in Condition 7.1.2 the Batch Residue Column was identified with a footnote as Group 2 batch vessel pursuant to the definition in 40 CFR 63.2550 (in Subpart FFFF, the MON) as claimed by the Permittee. Also see Condition 7.1.3(h)(i). Group 2 vessels are not subject to the control requirements of §63.2460 but a record must be kept that can verify their status as Group 2 vessels [see Condition 7.1.9(i)(i)] and the Illinois EPA must be notified [see Condition 7.1.10(e)(ii)] if the status changes to a Group 1 batch vessel.

ii. In condition 7.1.3(h)(ii) it states that the batch residue column is subject to 35 IAC 218 Subpart V. However, the process is exempt from the control requirements of 35 IAC 218.501 based on a provision in 35 IAC 218.500(e) which involves a calculation using applicability equations. These equations are shown in Attachment **6.** A record must be kept that can verify their status as in compliance using the applicability equations [see Condition 7.1.9(i)(ii)] and the Illinois EPA must be notified [see Condition 7.1.10(e)(ii)] if the status changes to noncompliance with the applicability equations.

7.1.5 <u>Control Requirements and Work Practices</u>

a. i. Notwithstanding 35 IAC 218.107 seasonal shutdown of the oxidizer system (catalytic reactors) between November and March is not allowed.

ii. The oxidizer (catalytic reactors) shall be operated at all times when any of the associated convertors are in operation, pursuant to 35 IAC 218.520, except as noted in Condition 7.1.3(j) and (k).

b. i. The minimum oxidizer (catalytic reactors) combustion chamber temperature shall be maintained at the manufacturer’s temperature but not lower than the temperature at which compliance was demonstrated in the most recent compliance test (644°F).

ii. The three oxidizers (catalytic reactors) shall be operated to reduce VOM emissions from the four converters/pretreaters by 98% [T1]. The HON also requires a 98% reduction in HAPs.

7.1.6 Production and Emission Limitations

In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected PA process units are subject to the following:

a. Maximum o-xylene feed rate to the four converters combined shall not exceed the following [T1]:

Tons/Mo: 10,584
Tons/Yr: 124,611

b. VOM emissions from the affected converters/pretreaters shall not exceed the following limits [T1]:

VOM Emissions	
(Ton/Month)	(Ton/Year)
14.5	170.8

These emissions are based on a maximum uncontrolled VOM emission rate from the PA emission units of 0.06854 lb VOM/lb o-xylene fed to the process. Emissions from startup, shutdown, malfunction and breakdown shall not exceed 17.35 tons per year. Emissions from startup, shutdown, malfunctions, and breakdowns that are in excess of 17.35 ton/yr are to be included in the annual limits of 170.8 ton/yr.

c. Emissions from the PA residue distillation column (431-019) shall not exceed the following limits [T1]:

VOM Emissions	
(Ton/Month)	(Ton/Year)
0.2	1.7

These limits are based on maximum operation.

d. 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).

The above limitations were established in Construction Permit 97010026 for the converters/pretreaters and in 90010012 from the PA residue distillation column, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a major modification pursuant to 35 IAC Part 203.

7.1.7 Testing Requirements

a. Within 120 days of a written notice from the Illinois EPA, the destruction efficiency or outlet concentrations of VOM and CO from the afterburners shall be determined by the test methods described in 35 IAC 218.526 which in turn references 218 Appendix C and/or 40 CFR 63.115.

b. For any equipment exempt from control requirements based on a TRE index value, the Illinois EPA may request a test be performed to verify the variables used in making the TRE calculation, employing the procedures in 35 IAC 218 Appendix C and/or 40 CFR 63.115.

c. Emission tests for any HON requirement shall follow the applicable test methods and procedures and compliance procedures summarized as follows. This is in addition to any applicable testing requirements in 40 CFR 63.3 (as classified in Table 3 of Subpart F).

Emission Type	Reference (40 CFR)
Process Vents	63.115 and 63.116
Storage Vessels	63.120
Transfer Operation	63.128
Process Wastewater	63.144 and 63.145
Equipment Leaks	63.180

7.1.8 Monitoring Requirements

a. The afterburners (catalytic reactors) shall use Illinois EPA and USEPA approved continuous monitoring equipment which is installed, calibrated, maintained and operated according to vendor specifications at all times the afterburners are in use [35 IAC 218.105(d)(2)(A)].

b. Each afterburner shall be equipped with a monitor which measures the temperature rise across the catalyst bed [35 IAC 218.105(d)(2)(A)(ii) and 40 CFR 63.114(a)(1)(ii)].

c. The Permittee shall conduct a visual inspection of the flaker baghouse exterior and its stack (when it is operating) on a weekly basis.

d. The Permittee shall inspect for leaking components as required by 35 IAC 218 Subpart Q (for VOM) and 40 CFR 63 Subpart H (for HAP). To the extent that they are duplicative, compliance with a more stringent leak rule shall be deemed compliance with a less stringent rule.

e. Pursuant to 40 CFR 63.114(d), the owner or operator of a process vent using a vent system that contains bypass lines that could divert a vent stream away from the catalytic reactors shall comply with paragraph (i) or (ii) listed

below. Equipment such as low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and pressure relief valves and rapture disks 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 Section 63.118(a)(3) of this subpart. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the control device to the atmosphere; 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 vent stream is not diverted through the by-pass line.

f. The owner or operator shall establish a range that indicates proper operation of the catalytic reactors temperature increase monitored under Condition 7.1.8(b). The range may be based upon a prior performance test conducted for determining compliance with a regulation promulgated by the USEPA, and the owner or operator is not required to conduct a performance test under Section 63.116 of this subpart, if the prior performance test was conducted using the same methods specified in Section 63.116 and either no process changes have been made since the test, or the owner or operator can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process changes [40 CFR 63.114(e)].

Since the same catalytic reactors also serve to control emissions of VOM, the above requirements may be considered to meet the CAM requirements. The HAP material is also a VOM.

g. If the TRE index value of the pre-distillation and main distillation column are above 4.0, a monitor is not required. If the TRE index value is between 1.0 and 4.0, the column shall meet the monitoring requirements of 40 CFR 63.114(b).

h. Compliance Assurance Monitoring (CAM) Requirements

The affected flaker is subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources. The Permittee shall comply with the monitoring requirements of the Compliance Assurance Monitoring (CAM) Plan described in Attachment 3, Table 3A, pursuant to 40

CFR Part 64 as submitted in the Permittee's CAM plan application.

7.1.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for the affected PA processes to demonstrate compliance with Conditions 5.6.1, 7.1.3, 7.1.5 and 7.1.6, pursuant to Section 39.5(7)(b) of the Act:

a. i. O-xylene feed rate to each PA converter and for combined converters in lb/mo.

ii. The PA production and recovery rate in lb/mo.

iii. A calculation of the VOM emissions rate based on the above data, using 98% destruction efficiency for the afterburner, excluding startup, shutdown and malfunction emissions allowed by Condition 7.1.3(j) and (k).

b. i. Afterburner monitoring data including daily average values and time periods when not in normal range.

ii. A log of operating time for the oxidizer, monitoring equipment detailing all routine and non-routine maintenance performed, including dates and duration of any outages.

c. Baghouse visual inspection observation.

d. Records required by 40 CFR 63.117 and 63.118 including measurements and calculations performed to determine the TRE index value of the vent streams not vented to the catalytic afterburners.

e. Records required by 40 CFR 63.181 for HON equipment leaks monitoring and by 35 IAC 218.426 for Subpart Q leaks monitoring.

f. Records for Compliance Assurance Monitoring (CAM) Requirements

The Permittee shall maintain records of the monitoring data, monitor performance data, corrective actions taken, monitoring equipment maintenance, and other supporting information related to the monitoring requirements in Condition 7.1.8(h), as required by 40 CFR 64.9(b)(1).

g. Records for Startup

The Permittee shall maintain the following records, pursuant to Section 39.5(7)(b) of the Act, for each

affected converter subject to Condition 7.1.3(j), which at a minimum shall include:

i. The following information for each startup of the converters:

A. Date and duration of the startup or shutdown i.e., start time and time normal operation achieved.

B. If normal operation was not achieved within one hour of firing fuel, an explanation why startup or shutdown could not be achieved within this time.

C. An explanation why established startup and shutdown procedures could not be performed, if not performed.

ii. A maintenance and repair log for the affected catalytic reactors, listing each activity performed with date.

h. Records for Malfunctions and Breakdowns

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of an affected converter subject to Condition 7.1.3(b) during malfunctions and breakdown, 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 affected converter continued to operate in accordance with Condition 7.1.3(k).

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.

vi. The amount of release above typical emissions during malfunction/breakdown.

i. Records Verifying Exemptions from Control Requirements

i. The Batch Residue Column was identified in Condition 7.1.2 and then classified in Condition 7.1.3(h)(i) as subject to the MON (40 CFR 63 Subpart FFFF). In Condition 7.1.4(i)(i) it was identified as not subject to the control requirements of Subpart FFFF

because it is a Group 2 batch vessel pursuant to the definition in 40 CFR 63.2550. A record must be kept that contains sufficient information to verify the status as a Group 2 batch vessel.

ii. The Batch Residue Column was identified in Condition 7.1.2 and then classified in Condition 7.1.3(i)(i) as subject to 35 IAC 218 Subpart V. In Condition 7.1.4(i)(ii) it was identified as not subject to the control requirements of Subpart V due to a provision in §218.500(e) employing applicability equations. A record must be kept that contains sufficient information (i.e. applicability equation calculations) to verify the status as exempt from control.

7.1.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of an affected PA process with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act within 30 days unless otherwise specified. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

i. Emissions of VOM from the affected PA process in excess of the limits specified in Conditions 7.1.6(b) or (c) within 30 days of such occurrence.

ii. Operation of the affected PA process in excess of the production limits specified in Condition 7.1.6(a) within 30 days of such occurrence.

iii. Failure to operate the catalytic oxidizers in accordance with the requirements of Condition 7.1.5(a) or (b).

iv. Reporting for any applicable HON rule shall follow the applicable rule summarized as below. This is in addition to any applicable general reporting requirements in 40 CFR 63.152, 63.103 and 63.10 (as clarified in Table 3 of Subpart F).

Emission Type	Reference (40 CFR)
Process Vents	63.117 and 63.118
Equipment Leaks	63.182

v. Applicable quarterly reporting as required by 35 IAC 218.426, Subpart Q.

b. Reporting of Compliance Assurance Monitoring (CAM)

The Permittee shall submit monitoring reports to the Illinois EPA in accordance with Condition 8.6.1 and shall include, at a minimum, the information required under Condition 8.6.1 and the following information [40 CFR 64.6(c)(3), 64.9(a)(1), and (2)]:

i. Summary information on the number, duration, and cause of excursions or exceedances, and the corrective actions taken [40 CFR 64.6(c)(3) and 64.9(a)(2)(i)]; and

ii. Summary information on the number, duration, and cause for monitoring equipment downtime incidents, other than downtime associated with calibration checks [40 CFR 64.6(c)(3) and 64.9(a)(2)(ii)].

c. Reporting of Malfunctions and Breakdowns

The Permittee shall provide the following notification and reports to the Illinois EPA, Air Compliance Unit and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of an affected converters subject to Condition 7.1.3(a) during a malfunction or breakdown.

i. A. 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 the malfunction or breakdown.

B. Upon achievement of compliance, the Permittee shall give a written follow-up notice within 15 days to the Illinois EPA, Air Compliance Unit and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected converters 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 converters were taken out of service. The report shall also specify if the action taken is not consistent with the SSM Plan described in Condition 7.1.3(d)(iii).

C. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Air Compliance Unit 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 converters will be taken out of service.

ii. In accordance with the due dates in Condition 8.6.1, the Permittee shall submit semi-annual malfunction and breakdown reports to the Illinois EPA pursuant to Sections 39.5(7)(a) and (f) of the Act. These reports may be submitted along with other semi-annual reports and shall include the following information for malfunctions and breakdowns of the affected PA process during the reporting period:

A. A listing of malfunctions and breakdowns, in chronological order, that includes:

I. The date, time, and duration of each incident.

II. The identity of the affected operation(s) involved in the incident.

B. Dates of the notices and reports of Conditions 7.1.10(c)(i).

C. Any supplement information the Permittee wishes to provide to the notices and reports of Conditions 7.1.10(c)(i).

D. The aggregate duration of all incidents during the quarter.

E. If there have been no such incidents during the calendar quarter, this shall be stated in the report.

d. Reporting of Startups

In accordance with the due dates in Condition 8.6.1, the Permittee shall submit semi-annual startup reports to the Illinois EPA pursuant to Sections 39.5(7)(a) and (f) of the Act. These reports may be submitted along with other semi-annual reports and shall include the following information for startups of the affected converters during the reporting period:

i. A list of the startups of the affected converters, including the date, duration and description of each

startup, accompanied by a copy of the records pursuant to Condition 7.1.9(g)for each startup for which such records were required.

ii. If there have been no startups of an affected converter during the reporting period, this shall be stated in the report.

e. Notification of Loss of Exemptions from Control Requirements

i. If the status of the Batch Residue Column changes from a Group 2 to a Group 1 batch process vessel pursuant to the definitions in 40 CFR 63.2550, the Illinois EPA must be notified prior to the change. A construction permit is likely to be required for a new control device or venting of the column to an existing control device.

ii. If a change is made in the process that is likely to show that the applicability equation calculations no longer demonstrate that the Batch Residue Column is exempt from the control requirements of 35 IAC 218 Subpart V, the Illinois EPA must be notified prior to the change. A construction permit is likely to be required for a new control device or venting of the column to an existing control device.

7.1.11 Operational Flexibility/Anticipated Operating Scenarios

Operational flexibility is not set for the affected PA process. However, there are provisions for source-wide operational flexibility set forth in Condition 5.11 of this permit.

7.1.12 Compliance Procedures

a. Compliance with Conditions 7.1.3(b), (c)(i), (d) and (e) is addressed by the requirements of Conditions 7.1.5, the testing requirements in Condition 7.1.7, the monitoring requirements in Conditions 7.1.8(a), (b), and (e)-(f), the recordkeeping requirements in Condition 7.1.9(a) and (b) and the reporting requirements in condition 7.1.10.

b. Compliance with Condition 7.1.3(c)(ii) is addressed by the use of raw materials that do not contain sulfur.

c. Compliance with Conditions 7.1.3(e)(ii) is addressed by the testing requirements in Condition 7.1.7(b), the monitoring requirements in Conditions 7.1.8(g), the recordkeeping requirements in Condition 7.1.9(d) and the reporting requirements in Condition 7.1.10.

d. Compliance with Conditions 7.1.3(f) is addressed by the equipment leaks monitoring requirements in Conditions

7.1.8(d) and the recordkeeping requirements in Condition 7.1.9(e) and the reporting requirements in Conditions 7.1.10(a)(iv) and (v).

e. VOM Emissions

VOM Emissions (lb/mo) = Uncontrolled VOM emissions determined by material balance (lb/mo) x 0.02 (excluding periods of malfunction of the afterburners)

f. PM Emissions

PM Emissions (lb/mo) = Uncontrolled PM emissions x 0.01.

g. HAP Emissions

Unless an emissions test or the mass balance in 7.1.12(e) demonstrates otherwise, all emissions are assumed to be HAPs.

h. Compliance with Condition 7.1.3(b) assures compliance with Condition 7.1.3(d), i.e., a 98% reduction of VOM emissions by the afterburner is greater destruction than 85%.

7.2 Unit: Batch Processes

7.2.1 Description

Many of the Permittee's processes are batch processes. These have been grouped together since they are subject to the same VOM rules, although a wide variety of chemicals are involved. Most of the processes use low vapor pressure materials with low VOM emissions and thus qualify for not requiring control equipment.

Note: This narrative description is for informational purposes only and is not enforceable.

7.2.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUTOX	Toximul Reactor (431-072)[c] and Two Blend Tanks (431-055 and 431-087)	Yes			None
EUN	Batch Neutralizers (32)				None for All
	M1 (443-034)[c]	No	Yes		
	M2 (443-035)[c]	No	Yes		
	M3 (431-044)[c]	No	Yes		
	M4 (431-060)[c]	No	Yes		
	M5 (431-086)[c]	No	Yes		
	M6 (443-041)[c]	No	Yes		
	M7 (431-090)[c]	No	Yes		
	M8 (421-103)[c]	Yes	Yes		
	M9 (421-095)[c]	Yes	Yes		
	M10 (443-268)[c]	No	Yes		
	C4 (431-031)[c]	Yes	Yes		
	C5 (431-032)[c]	Yes	Yes		
	C6 (431-052)[c]	Yes	Yes		
	C7 (443-207)[c]	No	Yes		
	C8 (421-096)[c]	Yes	Yes		
	C10 (434-019)[c]	No	Yes		
	C11 (434-032)[c]	No	Yes		
	E1 (443-157)[c]	No	Yes		
	E2 (443-162)[c]	Yes	Yes		
	E3 (443-161)[c]	No	Yes		
	E4 (421-094)[c]	Yes	Yes		
	E5 (421-097)[c]	Yes	Yes		
	E6 (443-160)[c]	No	Yes		
	E7 (431-068)[c]	No	Yes		
	H6K (421-125)[d] H8K (433-001)[d]	Yes Yes	Yes Yes		

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUN	Amphoteric Betaines R814(433-006)[c]		Yes		
EUBD	F16K (432-084) F18K(421-098) F28K(431-104) Biodiesel Reactors (See also Section 7.3 for a Continuous EUBD Process)				Scrubber S-928 (393-022)
EUAM	Amides Process Blend Tank (421-027)[c] Toximul Amides Reactor (431-061)[c]	No Yes	Yes Yes		
EUAM	Amide Reactors (2K, 434-011 and 7K, 431-074)	No	No		Condenser and Subcooler on Each 2K and 7K Line. Vent Condenser on the Vacuum Pump. Scrubber S-803 after Vent Condenser.

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUE	Esterification Processes A-4 Reactor (422-156) Esters Fractionator (401-004) MPR Reactor (431-095) (See also continuous processes [Condition 7.3.2] for some of equipment within this process and Condition 5.3.2(c) for the API separator	Yes Yes Yes		Yes Yes Yes	Scrubber S-105 Scrubber S-105 Scrubber S-105
EUH	Hydrotropes Process Same material is processed by four kettles in parallel (E, 434-045, A, 434-050; D, 434-051; and B 434-052)[d] The wash and recovery steps after are in continuous process [Condition 7.3.2]	Yes		Yes	None

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUF	Foams Reactors (10)				
	Kit Reactors (431-064 and 089)[c]	No	Yes		None
	Reactors V-25 (443-253 [c]	No	Yes		None
	Three Reactors V-10 (431-062)[c] V-1 (431-065)[c] V-14 (431-066)[c]	No	Yes		None
	Four Reactors V-11 (431-063)[c] V-12 (431-082)[c] V-19 (431-067)[c] V-24 (443-251)[c]	Yes	Yes		None
	Bag-Dump Station for V-11				Baghouse[e]
	IPA Still (411-105)	Yes		Yes	None
EUQU	Benzyl Quat Process				
	Reactor (433-002)[c], Filter and Precoat Tank	Yes		Yes	None
EUPT	Prill Tower for Quat Process (665-004)	Yes[f]		Yes	Scrubber (393-013) for both VOM and PM
EUAL	Alkoxylation Process				
	R-1 Reactor (431-073)	No		Yes	Scrubbers[g,h] (391-069) and (391-070) in Series
	R-2 Reactor (431-011)	No		Yes	

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUFS	Fabric Softener Process R-3 Reactor (431-097)[c] R-4 Reactor (421-104)[c] R-5 Reactor (431-102)[c]	 No No No	Yes[i]		Scrubbers[g,h] (391-069) and (391-070) in Series
EUAS	Ashland Stripper (421-052)	Yes		Yes	None
EUOM	Onamer M Process Numerous Vessels and Condensers but Only Vent is through Scrubber[c]	Yes		Yes	Wet Scrubber (205-506)
EUDF	Drum Filling	No		Yes	None
EULAL	LAL Process LAL Reactor (434-044)[d]	 Yes		 Yes	Wet Scrubber (391-056)
EUD	Drying Processes Two Drum Dryers (652-003 and 652-005) Material Handling Spray Dryer (655-003) Two Cyclones (672-026 and 674-021) for Product Recovery	 No No No No		 Yes Yes Yes	Venturi Scrubber (391-057) Baghouse (674-016) Venturi Scrubber (393-012) and Demister (196-031) in series Baghouse (674-020) and Demister (196-031) in Series

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUP	Batch Kettles (431-020, 421-064 and 421-067) Used Intermittently See Section 7.6 for a silo that stores material for this process	Yes		Yes	Combines with Polyol Vent to Catalytic Reactors

[a] De minimis pursuant to 35 IAC 218.500(c)(1) for single unit. The Permittee has not used 35 IAC 218.500(c)(2) for process train de minimis of 30,000 lb/yr; but it remains an option.

[b] Exempt from control requirements using the calculation procedure in 35 IAC 218.500(e) for flow rate (FR) and comparing it to average flow rate (AFR) using 35 IAC 218.502(b).

[c] Identified by the Permittee as exempt MON vents according to the definition in 40 CFR 63.2550(i)(8).

[d] Identified by the Permittee as Group 2 vessels according to the definition in 40 CFR 63.2550 [see Condition 7.2.4(f)].

[e] The baghouse is used when dumping solids into V-11.

[f] Cyclone recovers product, not a condenser.

[g] An ECO (Extended Cookout) is an alternate means of control described in 40 CFR 63.1427 and in the Permittee's NOCS for the 40 CFR 63, Subpart PPP rules used to achieve 98% reduction of epoxide emissions.

[h] The first scrubber is acidic which assists the VOM (ethylene oxide) to react to form ethylene glycol.

[i] This unit complies with 35 IAC 218 Subpart V without the use of the scrubbers but the Permittee operates the scrubbers in order to comply with the more stringent VOM emission limits from various construction permits as listed in Condition 7.2.6(a).

7.2.3 Applicable Provisions and Regulations

a. The "affected batch process" for the purpose of these unit-specific conditions, is an organic chemical manufacturing process described in Conditions 7.2.1 and 7.2.2.

b. Batch Operation Rule

i. These processes are subject to 35 IAC 218 Subpart V, “Batch Operations”, ' 218.500 through 218.506. Within 35 IAC 218.500(c) and 218.500(e) are levels of operation defined as de minimis and exempted from the control requirements of Section 218.501. These exemptions from control requirements are explained in further detail in the nonapplicability section [7.2.4(f)].

ii. The only emission units identified as not meeting the de minimis level or applicability equation for not requiring control equipment were Amide Reactors 2K and 7K within the EUAM emission unit category and the three Biodiesel Reactors in the EUBD emission unit category in Condition 7.2.2. These units must control VOM emissions by an overall efficiency, on average, of at least 90%, or 20 ppmv, per batch cycle [35 IAC 218.501(a) or (b)]. Items c, d, and e of this rule identify alternatives that are not applicable to the Permittee’s particular process.

c. Use of Organic Material Rule

The Permittee shall not cause or allow the discharge of more than 8 lb/hr of organic material into the atmosphere from any emission unit except as provided by Section 218.302. If no odor nuisance exists the limitation shall apply only to photochemically reaction reactive material pursuant to the definition in 35 IAC 211.4690. Section 218.302 allows the emissions to exceed 8 lb/hr if they are controlled by an incinerator (afterburner) or vapor recovery system which absorbs or condenses 85% of the uncontrolled organic material [35 IAC 218.301 and 218.302].

d. PM and Opacity Rules

i. The various solids material handling processes [e.g. reactor 431-063 in the EUF process, the Prill Tower (665-004) in the EUPT process and all equipment in the EUD drying process] listed in Condition 7.2.2 are subject to 35 IAC 212 Subpart L (§212.321 for new units or 212.322 for existing units). The method for calculating allowable emissions for this rule is in Attachment 2.

ii. The various solids material handling processes listed in Condition 7.2.2 are subject to 35 IAC 212.123. Pursuant to 35 IAC 212.123(a), the Permittee shall not 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, except as allowed by 35 IAC 212.123(b) and 212.124.

e. NESHAP Rules

i. The Alkoxylation Process (EUAL) is subject to the Polyether Polyol MACT rule, 40 CFR 63 Subparts PPP, A and H (via reference). Only the process control technology and leak detection requirements are applicable here. Applicable Storage tank and Wastewater provisions are discussed in Condition 7.4 and 7.6.

A. For the control technology of the Alkoxylation Process (EUAL), the Permittee shall comply with 40 CFR 63 Subpart PPP, Section 63.1425 (b)(ii) which requires that a 98% reduction of epoxide emissions be achieved by the use of scrubbers (391-069 and 391-070) or an extended cookout (ECO) described in 40CFR63.1427 and the Permittee’s NOCS for Subpart PPP.

B. For the entire Alkoxylation Process (EUAL), the Permittee shall comply with 40 CFR 63 Subpart H for equipment leaks (LDAR). However, only the process valves, pumps and other components that contain the raw materials ethylene oxide and propylene oxide are subject to the requirements since the product is a heavy liquid and not a light liquid. See Condition 7.2.8(f) for equipment leaks monitoring.

ii. The EUBD reactors, EUAM Amides reactors and EUE reactors (MPR and A4) and EUE fractionator are subject to Miscellaneous Organic NESHAP, 40 CFR 63 Subpart FFFF. The EUBD process also has a stripper process that continuous in nature and therefore that process is discussed in Section 7.3 of this permit.

A. The reactors and fractionator are classified as Group 1 batch process vents and must meet the general requirements of §63.2450 and the batch process vent requirements of §63.2460 and Table 2 of Subpart FFFF. A 98% reduction in HAPs is required by the control device.

B. The EUBD, EUAM and EUE processes are subject to the equipment leaks provisions of §63.2480, which in turn reference Table 6 of Subpart FFFF, which in turn specify compliance with 40 CFR 63 Subpart UU. Note that the equipment leaks provisions only apply to units in organic

HAP service, that is contains at least 5% by weight total HAP. See Condition 7.2.8(f) for equipment leaks monitoring.

C. The EUBD, EUAM and EUE processes are subject to the heat exchanger provisions of §63.2490, which in turn references Table 10 of Subpart FFFF, which in turn specify compliance with §63.104.

D. The EUBD, EUAM and EUE processes are also subject to the general provisions of §63 Subpart A as delineated in §63.2540 and Table 12 of Subpart FFFF. One of the provisions requires that the Permittee to have a written Startup, Shutdown and Malfunction (SSM) Plan for the reactors vented to the scrubbers on site under 40 CFR 63.6(e)(3).

The SSM Plan at the site and any revision to that plan is incorporated by reference and is enforceable as a term and condition of this permit.

Revisions to the SSM Plan are automatically incorporated by reference and do not require a permit revision.

7.2.4 Non-Applicability of Regulations of Concern

a. All of the affected units identified in Condition 7.2.2 are not subject to 35 IAC 218 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes because 35 IAC 218.960(a)(1) and (b)(1)(A) both state that emission units that are regulated by 218 Subpart V are not regulated by Subpart RR. All of these units are regulated by Subpart V.

b. All of the affected units identified in Condition 7.2.2 are not subject to any of the following NSPS or NESHAP regulations because none of the chemicals produced are listed in tables of those rules as follows:

Specific Rule	Process Type	Table of Affected Chemicals
40 CFR 60, Subpart NNN	SOCMI Distillation Processes	§60.667
40 CFR 60, Subpart RRR	SOCMI Reactor Processes	§60.707
40 CFR 63, Subparts F, G and H	Hazardous Organic NESHAP	Table 1 in Subpart F

c. The affected process vessels listed in Condition 7.2.2 that do not have any control equipment are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected process vessels do not use an add-on control device to achieve compliance with an emission limitation or standard.

d. The following affected emission units listed in Condition 7.2.2 are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected units listed do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels: EUF Bag Dump Station V-11, EUPT Prill Tower for Quat Process (665-004), EUOM Onamer M process vessels and the EUD Spray Dryer (655-003).

e. The HAP emissions from the affected EUAM Amide Reactors 2K and 7K and EUBD Biodiesel Reactors F16K, F18K, and F28K listed in Condition 7.2.2 are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected reactors are subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i).

f. Exemptions from Control Requirements

i. In the list of emission units in Condition 7.2.2 certain units were identified with a footnote as exempt or Group 2 batch process vents pursuant to the definition in 40 CFR 63.2550 (in Subpart FFFF, the MON) as claimed by the Permittee. Group 2 batch process vents are not subject to the control requirements of §63.2460 but a record must be kept that can verify their status as Group 2 batch process vents [see Condition 7.2.9(f)(i)] and the Illinois EPA must be notified [see Condition 7.2.10(c)(ii)] if the status changes to a Group 1 batch process vent.

ii. In Condition 7.2.3(b) it states that for de minimis emission levels many units are exempt from the control requirements of 35 IAC 218.501 as allowed by §218.500(c). These de minimis levels are as follows:

A. Within a batch operation, any single unit operation with uncontrolled total annual mass emissions of less than or equal to 500 lb/yr of VOM. Such single unit operations are also excluded from the calculation of the total annual mass emissions for a batch process train. If the uncontrolled total annual mass emissions from such exempt single unit operation exceed 500 lb/yr of VOM in any

subsequent year, the source shall calculate applicability in accordance with subsection (e) of Section 218.501 (See Condition 7.2.3(c)) for both the individual single unit operation and the batch process train containing the single unit operation; and

B. Any batch process train containing process vents that have, in the aggregate, uncontrolled total annual mass emissions, as determined in accordance with Section 218.502(a) of this Subpart, of less than 30,000 lb/yr of VOM for all products manufactured in such batch process train.

C. Note that single unit operation and batch process train are defined in 35 IAC 211.6025 and 211.696, respectively.

D. Condition 7.2.2 includes a column identifying equipment that meets these exemption levels, or a third exemption level, described in 7.2.4(f)(iii).

iii. If emissions exceed the levels in Condition 7.2.4(f)(ii), the applicability equations of 35 IAC 218.500(e) shall be performed to determine if the emission unit may qualify for not requiring control equipment. These equations are presented in Attachment 6, which also includes the determination method described in 35 IAC 218.502. An applicability analysis does not have to be performed for a single unit operation over 500 lb/hr but for which the VOM concentration is less than 500 ppmv, unless it is a unit within a batch process train.

7.2.5 <u>Control Requirements and Work Practices</u>

a. Scrubbers S-105, S-803 and S-928, which control VOM and HAP emissions from the EUE, EUAM and the EUBD units, shall be operated to reduce HAP emissions by 98% so as to comply with the requirements of the MON, 40 CFR 63.2460, which then refers to Table 2 of Subpart FFFF. S-803 will also reduce VOM emissions so as to comply with Condition 7.2.3(b)(ii) [35 IAC 218.501(a) or (b)]. S-105 also controls emissions from several storage tanks in Section 7.4.

b. During the initial compliance demonstration the Permittee shall establish operating limits for the units subject to the MON in accordance with the requirement in §63.2460(c)(3) and continue to operate within those limits.

c. Use of the baghouse is required when using the bag-dump station to charge solids to V-11 (431-063).

d. The Permittee shall follow good operating practices for the condensers, baghouses, and the various types of scrubbers, including periodic inspection, routine maintenance and prompt repair of defects.

7.2.6 Production and Emission Limitations

In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected units listed below are subject to the following:

a. Emissions from the affected units identified shall not exceed the following limits [T1]:

Process	VOM Emissions[a] (Lb/Mo)	VOM Emissions[a] (Ton/Yr)	Construction Permit Number
Benzyl Quat Process (EUQU)	800	3.7	89040012
Fabric Softener Reactors (R3, R4 and R5 Combined)	300	0.915	00100086
LAL Reactor (EULAL)	300	1.1	93090006
Two Foam Reactors 431-063 & 431-064 (Combined, EUF)	500	2.0	94090023
Neutralizer 443-162 (EUN)	400	1.6	95040086
Three Neutralizers, 421-095, 096 & 0103 (Combined, EUN)	1,500	5.1	90050072
Onamer M Scrubber (EUOM)	600	0.7	93120031
Prill Tower (EUPT)	2,600	12.4	87030076
Hy7drotropes, “E” Kettle, (EUH)	500	1.0	89050067
Neutralizers E4 and E5 (EUN)	1,100	6.4	90070080
Biodiesel Reactors Combined (EUBD)	460	1.41	05070058

Process	VOM Emissions[a] (Lb/Mo)	(Ton/Yr)	Construction Permit Number
A. Betaiknes (EUN-R814)		0.44	07080066

[a] Some past construction permits have not included short term limits so reasonable numbers were generated [T1]. Construction permit 03030053 allowed use of a different material with no increase and a limit was not imposed in the permit.

These limits are based on the maximum operation.

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).

The above limitations were established in the Construction Permit identified, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a major modification pursuant to 35 IAC Part 203.

b. PM emissions from the affected para-phthalic acid storage tank and slurry mixing tank shall not exceed 0.1 pounds per hour and 0.44 tons per year. These limits were established in Permit 05120048 [T1].

7.2.7 Testing Requirements

The performance and testing requirements of 35 IAC 218.503 for batch operations apply to all the affected processes listed in Condition 7.2.2 as follows. Requirements that are not relevant to the Permittee's current operation have not been included.

a. Upon a written request from the Illinois EPA, the owner or operator of a batch operation shall conduct testing to demonstrate compliance with Section 218.501. The owner or operator shall, at its own expense, conduct such tests in accordance with the applicable test methods and procedures specified in Section 218.503(d), (e), and (f) [35 IAC 218.503(a)].

b. The owner or operator of a batch operation that is exempt from the control requirements of Section 218.501 of this Subpart shall demonstrate, upon the Illinois EPA's request, the absence of oversized gas moving equipment in any manifold. Gas moving equipment shall be considered oversized if it exceeds the maximum requirements of the exhaust flow rate by more than 30 percent [35 IAC 218.503(d)].

c. For the purpose of demonstrating compliance with the control requirements in Section 218.501, the batch operation shall be run at representative operating conditions and flow rates during any performance test [35 IAC 218.503(e)].

d. The following methods in 40 CFR 60, Appendix A, incorporated by reference at Section 218.112, shall be used to demonstrate compliance with the reduction efficiency requirement set forth in Section 218.501 [35 IAC 218.503(f)]:

i. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotameter. 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;

ii. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe;

iii. Method 25A or Method 18, if applicable, to determine the concentration of VOM in the control device inlet and outlet;

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 Section 218.503 (f)(3)(A)(i) of this Section 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 (f)(3)(A)(i) of this Section. 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 define 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 Section 218.503(f)(3), 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 Section 218.503(f)(2), then such

event is not an emission event for purposes of this Section.

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 Section 218.503(f)(1) 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 Section 218.503(f)(1) throughout the batch cycle; and

D. The efficiency of the control device shall be determined by integrating the mass emission rates obtained in Section 218.503(f)(3)(B) and (f)(3)(C), over the time of the batch cycle and dividing the difference in inlet and outlet mass flow totals by the inlet mass flow total.

e. 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 Section 218.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions. The following alternate test method has been approved. Due to adverse conditions at the inlet to the control system (a high vacuum that varies considerably and a varying flow rate) the alternate test methods proposed to the USEPA and the Illinois EPA (CAE Protocol No. 8390 one dated November 4, 1998, the other dated September 2, 1999, pp 1366 – 1400 of the CAAPP application) has been accepted for testing the 2K and the 7K reactors in EUAM [35 IAC 218.503(h)].

f. In the absence of a request by the Illinois EPA to conduct performance testing in accordance with the provisions of this Section, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry [35 IAC 218.503(i)].

g. For processes in which is no control equipment to demonstrate compliance with a reduction in emissions requirement, the Illinois EPA reserves the right to review the calculations that establish the emission units as Group 2 process vents and require emissions testing or other testing for determining the actual variables in the calculation.

7.2.8 Monitoring Requirements

The monitoring requirements of 35 IAC 218.504 for batch operations apply to all the affected processes listed in Condition 7.2.2 as follows. Requirements that are not relevant to the Permittee=s current processes have not been included.

a. Every owner or operator using a scrubber to comply with this Section 218.501 shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following [35 IAC 218.504(c)]:

   i. A temperature monitoring device for scrubbant liquid having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius (or degrees Fahrenheit) and a specific gravity device for scrubbant liquid, each equipped with a continuous recorder; 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.

   iii. Note that if the scrubber is not required to comply with Section 218.501 (either for a specified emission reduction or for an applicability determination calculation), this information is not required.

b. Every owner or operator using a condenser to comply with Section 218.501 shall install, calibrate, maintain, and operate, according to manufacturer’s specifications, the following [35 IAC 218.504(d)]:

   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; or

   ii. A VOM monitoring device used to indicate the concentration of VOM such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.

c. NESHAP Monitoring

   i. For the EUE, EUBD and EUAM processes that are subject to the MON, the Permittee has established operating limits during the initial compliance demonstration for either the emission unit and/or the control equipment on the process pursuant to §63.2460(c)(3) [See Condition 7.2.5(b)]. The Permittee shall continue to monitor these established limits in

accordance with the requirements in §63.8 in Subpart A.

The EUE, EUBD, EUH, EUP and EUAM processes are subject to the MON equipment leaks requirements of §63.2480. That rule references Table 6 of Subpart FFFF. That table has several options and the Permittee has chosen to comply with the requirements in 40 CFR 63 Subpart UU.

ii. For the EUAL (polyether polyol) process the Permittee shall follow operating limits for the scrubbers (391-069 and 391-070) and for the Extended Cookouts (ECOs) as described in the Permittee's NOCS for 40 CFR 63, Subpart PPP.

The EUAL process is subject to the §63 Subpart PPP equipment leaks requirements of §63.1434. That rule references the equipment leak standards of §63 Subpart H using the test methods (monitoring) in §63.180.

iii. The heat exchangers in the EUBD, EUAM and EUE processes must comply with the leak monitoring requirements of §63.104.

d. Compliance Assurance Monitoring (CAM) Requirements

i. The affected Drum Dryers in the Drying Processes (EUD) are subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources. The Permittee shall comply with the monitoring requirements of the Compliance Assurance Monitoring (CAM) Plan described in Attachment 3, Table 3B. pursuant to 40 CFR Part 64 as submitted in the Permittee's CAM plan application.

ii. The affected EUAM 2K and 7K reactors are both subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources for VOM emissions. The Permittee shall comply with the monitoring requirements of the Compliance Assurance Monitoring (CAM) Plan described in Attachment 3, Table 3C. pursuant to 40 CFR Part 64 as submitted in the Permittee's CAM plan application. As stated in Condition 7.2.5(a).

7.2.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for each affected emission units to demonstrate compliance with Condition 5.6.1, 7.2.3, and 7.2.5 through 7.2.6, pursuant to Section 39.5(7)(b) of the Act:

a. The monitoring requirements of 35 IAC 218.504 for batch operations apply to all the affected processes listed in Condition 7.2.2 as follows. Requirements that are not relevant to the Permittee=s current processes have not been included.

   i. Every owner or operator using a scrubber to comply with this Section 218.501 shall install, maintain and operate, according to manufacturer’s specifications, the following:

      A. Continuous recorders for the temperature and specific gravity of the scrubbant liquid as specified in Condition 7.2.8(a)(i) or of the VOM concentration specified in Condition 7.2.8(a)(ii).

      B. Note that if the scrubber is not required to comply with Section 218.501, this information is not required.

   ii. Every owner or operator using a condenser to comply with Section 218.501 shall install, maintain and operate, according to manufacturer’s specifications a continuous recorder for the condenser exit temperature as specified in Condition 7.2.8(b)(i) or of the VOM concentration specified in Condition 7.2.8(b)(ii).

   iii. The owner or operator of a process vent shall be permitted to monitor by an alternative method or may monitor parameters other than those listed in subsections (a) through (b) of this Section, if approved by the Illinois EPA and USEPA. Such alternative method or parameters shall be contained in the source's operating permit as federally enforceable permit conditions.

b. The Permittee shall keep records documenting by use of calculations or emission test results which units comply with the de minimis exemption levels specified in Conditions 7.2.3(b) and which units comply by employing the applicability equation in Condition 7.2.3(c). For any emission rate above 8 lb/hr uncontrolled, the Permittee shall keep records of the photochemical nature of the material emitted.

c. Records for Compliance Assurance Monitoring (CAM) Requirements

   The Permittee shall maintain records of the monitoring data, monitor performance data, corrective actions taken, monitoring equipment maintenance, and other supporting

information related to the monitoring requirements in Condition 7.2.8(d), as required by 40 CFR 64.9(b)(1).

d. Records for control equipment:

   i. Records for periodic inspection of the condenser, baghouse and the various scrubbers including the date and individual performing the inspection and the nature of the inspection; and

   ii. Records for prompt repair of defects, with identification and description of the defect, the effect on emissions, date identified and date of repair, and the nature of the repair.

e. NESHAP Records for EUAL (Alkoxylation, a Polyether Polyol) Process

   i. Records for Group 2 process vents as required by 40 CFR 63.1430.

   ii. Any other records required by §63.10 (Subpart A) or §63.1439 (Subpart PPP).

   iii. Records for heat exchanger provisions which reference §63 Subpart F and records for equipment leaks provisions which reference §63 Subpart H. For equipment deemed exempt from heat exchanger or equipment leaks requirements, the reason land documentation for the provisions not being applicable.

f. NESHAP Records for EUE, EUBD, EUAM (Esterification, Biodiesel and Amide Reactors) [i.e. all MON] Processes

   i. Records for Group 2 process vents that can verify their status as Group 2.

   ii. Records of all control equipment operating parameters established as critical parameters during the initial compliance demonstration and the acceptable range of those values.

   iii. Any other records required by or in the manner specified in §63.10 (Subpart A) or §63.2525 (Subpart FFFF) including a copy of the Startup, Shutdown and Malfunction Plan.

   iv. Records addressing heat exchanger provisions which reference §63 Subpart F requirements and records for equipment leaks provisions which reference §63 Subpart UU requirements. For equipment deemed exempt from heat exchanger or equipment leaks requirements,

the reason and documentation for the provisions not being applicable.

g. VOM and PM emissions sufficient to verify compliance with the various limits in Condition 7.2.6.

h. VOM and PM emissions for annual emission report.

7.2.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of an affected process unit 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. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements of Section 218.501 by means of Section 218.500(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 in Section 218.500(c)(1) or (c)(2), respectively, within 60 days after the event occurs. Such notification shall include a copy of all records of such event.

ii. The owner or operator of an affected emission unit exempt from the control requirements of Sections 218.501 by means of the applicability equations in Section 218.500(d) and (e) shall notify the Illinois EPA in writing if the uncontrolled total annual mass emissions exceed those calculated by the applicability equations within 60 days after the event occurs. Such notification shall include a copy of all records of such event.

iii. Failure to operate control equipment to achieve required efficiency within 30 days of such occurrence.

iv. Emissions of VOM or PM from the affected process units in excess of the limits specified in Condition 7.2.6 within 30 days of such occurrence.

v. Operation of the affected process units in excess of the limits specified in Condition 7.2.3 within 30 days of such occurrence.

b. Reporting of Compliance Assurance Monitoring (CAM)

The Permittee shall submit monitoring reports to the Illinois EPA in accordance with Condition 8.6.1 and shall include, at a minimum, the information required under Condition 8.6.1 and the following information [40 CFR 64.6(c)(3), 64.9(a)(1), and (2)]:

i. Summary information on the number, duration, and cause of excursions or exceedances, and the corrective actions taken [40 CFR 64.6(c)(3) and 64.9(a)(2)(i)]; and

ii. Summary information on the number, duration, and cause for monitoring equipment downtime incidents, other than downtime associated with calibration checks [40 CFR 64.6(c)(3) and 64.9(a)(2)(ii)].

c. NESHAP Reporting

i. Any reporting required by the NESHAP, such as Subpart PPP (§63.1430 and 63.1439), Subpart FFFF (§63.2520) or Subpart A (§63.10).

ii. Notification that any batch process vent has changed from a Group 2 to Group 1 batch process vent.

7.2.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to any affected process unit 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:

Materials of different composition than those previously listed in the CAAPP application may be produced provided they undergo an environmental review as discussed in Condition 5.5.

7.2.12 Compliance Procedures

a. Emissions shall be calculated by a material balance using loss per batch or loss per million pounds of product manufactured as calculated in the application and the ERMS baseline and established control efficiencies.

b. The ERMS emission baseline for the 2K and 7K reactors within EUAM, and the reactors in EUBD and EUE were determined before the MON scrubbers were installed. Because of this, the methodology presented on page 483d of the CAAPP application and a 98% VOM and HAP reduction at the scrubbers will be used in lieu of the emission factors used

in the ERMS baseline determination. This methodology involves a measurement of the flow rate and temperature of the vapor entering the scrubber. These values are temporarily stored in the computerized control system for the process. With these values and the vapor pressure of methanol at various temperatures, a mass emission rate into and out of the scrubbers will be calculated by the computer. The flow rate and temperature measurements are divided into three main phases of the process: charging, ramping (heating up) and cooking. Once the emission rate has been calculated, the input temperature and flow rate are no longer stored. Once a monthly emission rate has been determined from the sum for all emission events during the month, the event values are no longer stored.

c. For the equipment identified specifically in Condition 7.2.6, loss per batch or loss per million pounds of product may be calculated based on the methodology used in the construction permit application cited for the equipment.

d. Compliance with Condition 7.2.3(b)(ii) is addressed by the requirements of Condition 7.2.5(a), the testing requirements in Condition 7.2.7, the monitoring requirements in Condition 7.2.8(a) and (e)(ii), and the records and reports required in Condition 7.2.9(a) and 7.2.10(a).

e. Compliance with Condition 7.2.3(d) is addressed by the requirements of Condition 7.2.5(c) and (d), the CAM monitoring required by Condition 7.2.8(d)i) and the records and reports required in Condition 7.2.9(c) and (d) and 7.2.10(a) and (b).

f. Compliance with Condition 7.2.3(e)(i) is addressed by the monitoring required by Condition 7.2.8(c)(ii) and the records and reports required in Condition 7.2.9(e) and Condition 7.2.10(a) and (c).

g. Compliance with Condition 7.2.3(e)(ii) is addressed by the monitoring required by Condition 7.2.8(c)(i) and the records and reports required in Condition 7.2.9(f) and Condition 7.2.10(a) and (c).

h. Compliance with the exemptions in Condition 7.2.4(f) is addressed by the records and reports required in Condition 7.2.9(b) and Condition 7.2.10(a).

i. Compliance with Condition 7.2.6 is addressed by the records and reports required in Condition 7.2.9(g) and Condition 7.2.10(a)(iv).

7.3 Unit: Synthetic Organic Chemical Continuous Distillation and Reactor Processes

7.3.1 Description

This section includes various synthetic organic chemical manufacturing processes that are continuous in nature and thus not subject to the air oxidation or batch process rules. The specific processes are identified in Condition 7.3.2. VOM emissions are the primary concern but two sulfonation units have wet scrubbers to reduce SO_2/SO_3 emissions. There are two modes for the sulfonators, with and without olefin feeds, SO_2 emissions are higher when using olefin feeds. Two reactors for one process vent to catalytic reactors (afterburners) for the air oxidation process (Section 7.1) but none of the other processes are required to have VOM control equipment. Some of the processes use condensers and/or separators to recover product or solvent. This type of recovery device is not considered to be control equipment, but TRE values may be determined at the outlet of the recovery device. All units other than the ones vented to catalytic afterburners comply by maintaining a TRE index value greater than 1.0. In addition, since the TRE is greater than 4.0, the units are exempt from monitoring, recordkeeping, and reporting requirements. The TRE values are high due to either processing of very low vapor pressure materials or very low air flow rates through the equipment.

Note: This narrative description is for informational purposes only and is not enforceable.

7.3.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUS	Sulfonation Units: E (431-057) F (431-080) G (431-069) H (431-088) I (431-081) J (431-096) G, H and J Units have Deaerators	 1974 1982 1985 1988 1987 1991	Packed Tower Scrubber (Dry) or KOH Scrubber and Demister on H and I Units Demisters only on all other units
EUBD	Biodiesel Processes: Recovering Methanol by Stripping from Glycerin EUBD-HR (421-043) w/Process Condenser	2006	None (Process Condensers)

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUE	Esterification Unit (See also Batch Processes) Continuous Units Affected: Methanol Column (402-014), IPA Column (401-008) and Glycerine Stripper (401-009)	1973 1989 1997	None
EUH	Hydrotropes Unit (See also Batch Processes) Continuous Units Affected: Wash Columns #1 and #2 (403-001 and 002) and Xylene Recovery Kettles (421-108 and 434-003)	1986 1990 1990 1984	None
EUSME	Sulfonated Methyl Esters SME Reactor R2 (411-412)	1996	Vented to EUN Process (See Batch Processes, Section 7.2)
EUP	Polyol Unit Two Reactors 421-065 and 066 Vented Through Condensers to Phthalic Anhydride Catalytic Reactor (Afterburner) DEG Column 402-020 Azeotrope Column 402-023	1987 1988	PA Catalytic Reactors (Afterburners) (see Section 7.1) None None

7.3.3 Applicable Provisions and Regulations

a. The “affected continuous distillation or reactor process” for the purpose of these unit-specific conditions, are processes described in Conditions 7.3.1 and 7.3.2.

b. SOCMI Rule (35 IAC 218 Subpart Q)

Each process meets the applicability requirements in 35 IAC 218.431(a)(1) and/or 218.431(a)(2). However, none of the processes are subject to the control requirements of 35 IAC 218.432(a) because the vent conditions meet the requirements of §218.432(c). These exemptions from control requirements are explained in further detail in the nonapplicability section [Condition 7.3.4(f)].

c. Sulfonation Process SO_2 Rules

The affected sulfonation process is subject to the following rules:

i. The Permittee shall not cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2,000 ppm (35 IAC 214.301).

ii. The Permittee using sulfuric acid not shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all other similar emission sources at a plant or premises to exceed:

A. 0.10 lb in any one hour period for sulfuric acid usage less than 1,300 ton/yr (100 percent acid basis).

B. 0.51 lb per ton of acid used for sulfuric acid usage greater than or equal to 1,300 ton/yr (100 percent acid basis (35 IAC 214.303).

d. PM and Opacity Rules

i. Each affected sulfonator is subject to 35 IAC 212.321(a) in Subpart L. The method for calculating allowable emissions for this rule is in Attachment 2.

ii. Each affected sulfonator is subject to 35 IAC 212.123. Pursuant to 35 IAC 212.123(a), 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, except as allowed by 35 IAC 212.123(b) and 212.124.

e. Use of Organic Material Rule

The Permittee shall not 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 218.302, 218.303, 218.304 and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

f. NESHAP Rule

The EUBD biodiesel drying and methanol stripping processes are subject to Miscellaneous Organic NESHAP, 40 CFR 63 Subpart FFFF.

i. The methanol stripper/distillation process is classified as a continuous process and must meet the general requirements and the continuous process vent requirements of §63.2455. The condenser is classified as a process condenser, not a control device. The Permittee's method of compliance is the provision in §63.2455(b) that allows the use of a TRE index value as calculated by the procedures in §63.115(d), with the exception that the TRE index value must be above 8.0 for a new/reconstructed unit.

ii. The stripping process is subject to the equipment leaks provisions of §63.2480, which in turn reference Table 6 of Subpart FFFF, which in turn specify compliance with 40 CFR 63 Subpart UU or 40 CFR 65 Subpart F. Note that the equipment leaks provisions only apply to units in organic HAP service, that is contains at least 5% by weight total HAP.

iii. The stripper process is subject to the heat exchanger provisions of §63.2490, which in turn references Table 10 of Subpart FFFF, which in turn specify compliance with §63.104.

iv. The EUBD Process is also subject to the general provisions of §63 Subpart A as delineated in §63.2540 and Table 12 of Subpart FFFF.

v. Methanol contaminated materials and distilled methanol are stored in several storage tanks (BD1 to BD7). All storage tanks for this source are described in Section 7.4 of this permit, including the applicable NESHAP requirements.

7.3.4 Non-Applicability of Regulations of Concern

a. 35 IAC 218 Subpart RR applies to organic chemical manufacturing processes. However, 35 IAC 218.960(a)(1) and (b)(1)(A) state that a process is only subject to Subpart RR if not subject to Subpart Q, and these processes are subject to Subpart Q (Section 218.431 through 436). Although subject to the reactor and distillation unit requirements of Subpart Q, none of the processes listed in Condition 7.3.2 are subject to the LDAR requirements of Subpart Q (Section 218.421 through 429) because those requirements only apply to processes manufacturing chemical listed in Appendix A of 35 IAC 218. None of the processes in this Section manufacture chemicals in Appendix A.

b. While the products manufactured in the equipment listed in this Section are synthetic organic chemicals, the processes are not subject to 40 CFR 60 Subpart VV, NNN, or RRR because they are not one of the specific chemicals listed

in the applicability section (§60.489, 60.667 or 60.707) or otherwise exempted from the requirements of these rules.

c. While the products manufactured in the equipment listed in this Section are synthetic organic chemicals, none of the processes are subject to the Hazardous Organic NESHAP (40 CFR 63 Subparts F, G, and H) because the specific chemicals manufactured are not on the list of chemicals to which the HON applies. The list is Table 1 of Subpart F, 40 CFR 63.106.

d. The affected EUBD processes, the EUE Esterification Unit, the EUH Hydrotropes Unit, the EUSME reactors, and the EUP Polyol Unit DEG and Azeotrope Columns are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected units do not use an add-on control device to achieve compliance with an emission limitation or standard. The affected EUBD methanol recovery processes are also not subject because they are subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i) and do not use an add-on control device to achieve compliance with an emission limitation or standard.

e. The affected EUP Polyol Unit reactors are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected units are vented to a control device that is subject to a NESHAP proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i). Operation and monitoring of that control device is addressed in Section 7.1 of this Permit.

f. Exemptions from Control Requirements

i. In Condition 7.3.2(a) it states that the processes meet the applicability requirements in 35 IAC 218.431(a)(1) and/or 218.431(a)(2). Although subject to the rule, none of the processes are subject to the control requirements of 35 IAC 218.432(a) because the vent conditions meet the requirements of §218.432(c). This rule specifies that for each individual vent stream within a chemical manufacturing process unit with a TRE index value greater than 1.0, the owner or operator shall maintain process vent stream parameters that retain a calculated TRE index value greater than 1.0 by means of recovery. Any recovery device shall have as its primary purpose the capture of chemicals for use, reuse, or sale. The TRE index value shall be calculated at the outlet of the final recovery device.

ii. In Condition 7.3.3(f) it states that the methanol strippers/distillation processes and biodiesel drying comply with §63.2455(b)[in Subpart FFFF, the MON] by maintaining the TRE index value above 8.0. This

exempts the vents from having to comply with the control requirements of §63.2455(a) which references Table 1 of Subpart FFFF.

7.3.5 Control Requirements and Work Practices

a. The wet (KOH) scrubbers (391-058 and 391-059) with their demisters in series shall be operated to reduce PM emissions by 90% and SO_2 emissions by 98%. SO_3 or sulfuric acid is also removed but the low concentrations in the inlet and outlet make a percent reduction difficult to specify. To assure these reductions the Permittee shall follow good operating practices for the scrubbers, including periodic inspection, routine maintenance and prompt repair of defects.

b. The demisters shall be operated to reduce VOM emissions by 25% and PM emissions by 90%. SO_3 or sulfuric acid is also removed but the low concentrations in the inlet and outlet make a percent reduction difficult to specify.

c. Sulfonation Units E, F, and G may operate for a maximum of 5,040 hours combined using olefin feedstock. The remaining 21,240 hours must use standard organic feedstock. During production with olefin feedstock, SO_2 emissions are higher (See Condition 7.3.12).

d. The polyol process reactors and dioxane recovery system shall be vented to the PA process catalytic afterburners which shall be operated in accordance with Condition 7.1.5(b)(ii).

e. All products shall be manufactured by specific formulas for each product.

f. The demisters in the sulfonation process shall be inspected during annual shutdowns. These inspections shall be conducted following API 653 standards that include visual and ultrasonic thickness testing. These inspections shall be used to show indications of breakdown of the structural integrity of the demister.

g. The EUBD biodiesel processes shall be operated so as to maintain the TRE index value of the vent stream above 8.0 in order to comply with 40 CFR 63 Subpart FFFF [See Condition 7.3.3(f)(i)]. 40 CFR 63.2455, which contains the requirements for continuous process vents specifies that the recovery device requirements of 40 CFR 63.982(e) must be met. §63.982(e) in turns states that the monitoring requirements of §63.996 and the recordkeeping and reporting requirements of §63.998 and §63.999 must be met. See Section 7.3.8 through 7.3.10 for those requirements.

A TRE above 8.0 also meets the requirement that the TRE index value be above 1.0 in order to comply with 35 IAC with §218.432(c) [See Condition 7.3.3(b)].

7.3.6 Production and Emission Limitations

In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected units are subject to the following:

Emissions from the following affected sulfonators shall not exceed the following limits [T1]:

	EMISSIONS					
	SO_2		SO_2		VOM	
Operation	(Lb/Mo)	(T/Yr)	(Lb/Mo)	(T/Yr)	(Lb/Mo)	(T/Yr)
"G" Unit Deareator Only	150	0.8	20	0.008	20	0.1
"J" Unit Deareator Only	200	0.44			0.01	0.044

Emissions from the affected sulfonated methyl ester reactors shall not exceed the following limits [T1]:

	VOM Emissions	
EUSME Reactors	(Lb/Mo)	(Ton/Yr)
R2 (411-412)	800	4.5

Emissions of VOM and HAPs from the esterification unit (EUE) glycerine stripper/condenser shall not exceed the following limits [T1]:

VOM and HAP Emissions	
(Ton/Mo)	(Ton/Yr)
0.25	2.98

Emissions of VOM and HAPs from the hydrotropes unit (EUH) wash Column No. 2 and xylene recovery systems shall not exceed the following limits [T1]:

VOM and HAP Emissions	
(Lb/Mo)	(Ton/Yr)
600	3.0

These limits are based on the maximum operation.

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).

The above limitations were established in Construction Permit 94060078 for “G”, 98020024 for “J”, 95060104 for the EUSME reactors, 96110013 for the glycerine stripper and 90110068 for the hydrotropes wash Column No. 2 and xylene recovery systems, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a major modification pursuant to 35 IAC Part 203 [T1].

7.3.7 Testing Requirements

Within 120 days of a written notice from the Illinois EPA, the outlet concentrations of VOM, SO_2, SO_3, or PM from any vents shall be tested using appropriate test methodology. In lieu of VOM emission rates, the Illinois EPA may request air flow rates be determined by testing in order to verify TRE calculations.

7.3.8 Monitoring Requirements

a. Pursuant to 35 IAC 218.434(d), monitoring of the processes for VOM emissions is only required if the TRE index value is below 4.0. The Permittee has demonstrated that the TRE index value is greater than 4.0.

b. For the reactors in the EUP (Polyol) process vented to the phthalic anhydride catalytic reactors (afterburners) as described in Section 7.1, the Permittee shall monitor those processes as required by Condition 7.1.8.

c. To comply with the continuous process vent requirements of 40 CFR 63.2455 the general monitoring requirements of 40 CFR 63.996 (within Subpart SS) must be followed and meet the requirements for a Continuous Parameter Monitoring System (CPMS). All of the specific details of that rule will not be listed here but the following are noted (may be paraphrased):

   i. All monitoring equipment shall be installed, calibrated, maintained and operated according to manufacturer’s specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately [§63.996(c)(1)]; and

   ii. The Permittee shall establish a range for monitored parameters that indicates proper operation of the recovery device (process condensers). The range shall be based upon a prior TRE index value determination [§63.996(c)(6)].

d. The opacity of each of the sulfonators shall be observed once per quarter. The observation does not need to be done by a certified observer.

7.3.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for the affected emission units listed in Condition 7.3.2 to demonstrate compliance with Condition 5.6.1, 7.3.3, 7.3.5 and 7.3.6, pursuant to Section 39.5(7)(b) of the Act:

a. Since the demonstrated TRE index value is above 4.0 records are not required to demonstrate compliance with 35 IAC 218.431 through 218.434. However, the Permittee shall keep records of the engineering assessment made to demonstrate that the TRE index value is above 4.0 as described in 35 IAC 218.433(a)(3).

b. For processes vented to units described in other sections, i.e., 7.1 and 7.2, the Permittee shall keep records required by conditions in those sections

c. Annual VOM, SO_2, SO_3, and PM emissions calculated by the procedures in Conditions 7.3.12.

d. Special records are required for specific equipment within a unit to verify the limits in Condition 7.3.6. Since emission rates are low, estimates of emissions may be based on any reasonable assumptions.

e. Records for control equipment:

   i. Records for periodic inspection of the scrubbers including the date and individual performing the inspection and the nature of the inspection; and

   ii. Records for prompt repair of defects, with identification and description of the defect, the effect on emissions, date identified and date of repair, and the nature of the repair.

f. Records for Compliance Assurance Monitoring (CAM) Requirements

   The Permittee shall maintain records of the monitoring data, monitor performance data, corrective actions taken, monitoring equipment maintenance, and other supporting information related to the monitoring requirements in Condition 7.3.8(a), as required by 40 CFR 64.9(b)(1).

g. NESHAP Records for EUBD (Biodiesel strippers and dryer) Process

i. A record of how the TRE calculation was determined as described in §63.2455.

ii. §63.2455 also requires that the recovery device requirements of 40 CFR 63 Subpart SS [§63.982(e)] be met and this rule references the recordkeeping requirements of §63.998. The appropriate record for recovery devices is in §63.998(a)(3) and for a condenser that record is the average exit (product side) temperature averaged over the same time period as the TRE index value determination.

iii. Any other records required by §63.10 (Subpart A) or §63.2525 (Subpart FFFF).

iv. Records for heat exchanger provisions which reference §63 Subpart F and records for equipment leaks provisions which reference §63 Subpart H.

h. Quarterly sulfonator opacity observations.

7.3.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of an affected emission units listed in Condition 7.3.2 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. Since the TRE index value is greater than 4.0, the Permittee is not subject to exceedance reporting requirements of the draft Enhanced Monitoring Guidelines a published in 58 PR 54648, October 22, 1993.

ii. Continued operation of the two reactors vented to the wet (KOH) scrubbers during malfunction or breakdown of the scrubber.

iii. Operation of the sulfonation using olefin feedstock in excess of 5,040 hours per year allowed by Condition 7.3.5.

b. Reporting of Compliance Assurance Monitoring (CAM)

The Permittee shall submit monitoring reports to the Illinois EPA in accordance with Condition 8.6.1 and shall include, at a minimum, the information required under

Condition 8.6.1 and the following information [40 CFR 64.6(c)(3), 64.9(a)(1), and (2)]:

i. Summary information on the number, duration, and cause of excursions or exceedances, and the corrective actions taken [40 CFR 64.6(c)(3) and 64.9(a)(2)(i)]; and

ii. Summary information on the number, duration, and cause for monitoring equipment downtime incidents, other than downtime associated with calibration checks [40 CFR 64.6(c)(3) and 64.9(a)(2)(ii)].

c. NESHAP Reporting

i. Any reporting required by the NESHAP, such as Subpart FFFF (§63.2520), §63 Subpart A (§63.10) or Subpart SS (§63.999) as referenced by §63.2455 and §63.982(e).

ii. If the TRE index value of the methanol strippers/distillation processes and biodiesel drying processes fall below 8, the Illinois EPA must be notified as control requirements may become applicable.

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 emission units 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. The Permittee may routinely switch to use of olefins as a feedstock as allowed by Condition 7.3.5 provided that cumulative hours do not exceed the limit in Condition 7.3.5.

b. New products may be manufactured provided that laboratory tests or engineering assessments indicate that emissions are approximately the same as currently manufactured products. Materials of different composition than those previously listed in the CAAPP application shall undergo an environmental review as discussed in Condition 5.4.

7.3.12 Compliance Procedures

a. For any new product or changes in process conditions for existing products, that would be expected to result in a higher VOM concentration and/or a lower heating value (in MJ/g VOM) than the current maximum based upon the Permittee's Experimental Production Request/P-COM review

cited in Condition 5.4, the Permittee shall calculate the TRE index value using the formula in 35 IAC 218 Appendix G. The test methods also described do not have to be performed, unless engineering assessment shows the TRE index value to be less than 4.0.

b. Since the calculated TRE index value of greater than 4.0 assures that VOM emissions will be less than 1.0 lb/hr, no special procedures are required to demonstrate compliance with 35 IAC 218.301 (Condition 7.3.3(e).

c. SO_3 Emissions (lb/mo) = Air Flow Rate (scfm) x 0.00124[a] x Production Time (hr/mo)

[a] Conversion from tested 10 ppm to pounds per scfm

d. SO_2 Emissions Calculations

i. For processes not vented through the wet scrubber.

SO_2 Emissions (lb/mo) = SO_3 Usage (lb/mo) x 0.002

ii. For AOS (olefin feedstock) production in the sulfonators not vented through a wet scrubber:

SO_2 Emissions (lb/mo) = AOS production (lb/mo) x 0.005

iii. For processes vented through the wet scrubber.

SO_2 Emissions (lb/hr) = SO_3 Usage (lb/mo) x 0.002 x 0.02

e. VOM Emissions:

Use of product specific emission factors developed from previous testing or engineering assessment.

VOM Emissions = Production Time (hr/mo) x Product Specific Emission Factor (lb/hr)

Or

Production Rate (ton/mo) x Product Specific Emission Factor (lb/ton)

f. PM Emissions Calculations:

i. For processes not vented through the wet scrubber:

PM Emissions (lb/mo) = Air Flow Rate (scfm) x 0.0000343[b] x Production Time (hr/mo)

[b] Conversion from uncontrolled 0.4 grains/scf using 90% control by demister

ii. For processes vented through the wet scrubber:

PM Emissions (lb/mo) = Air Flow Rate (scfm) x 0.00000343 x Production Time (hr/mo)

g. For the equipment identified specifically in Condition 7.3.6, loss per batch or loss per MM LB of product may be calculated based on the methodology used in the construction permit application cited for the equipment.

h. Compliance with Condition 7.3.3(b) is addressed by the testing requirements of Condition 7.3.7 and the records and reports required in Conditions 7.3.9(a) and 7.3.10.

i. Compliance with Condition 7.3.3(c) and (d) are addressed by the requirements of Condition 7.3.5(a) and (f), the monitoring requirements of Condition 7.3.8(d) and the records and reports required in Conditions 7.3.9(e) and (h) and 7.3.10.

j. Compliance with Condition 7.3.3(e) is addressed by the records and reports required in Conditions 7.3.9(a) and 7.3.10.

k. Compliance with Condition 7.3.3(f) is addressed by the monitoring requirements in Condition 7.3.8(c)and the records and reports required in Conditions 7.3.9(g) and 7.3.10.

l. Compliance with the VOM, SO_2 and SO_3 emission limitations of Condition 7.3.6 are addressed by the records and reports required in Conditions 7.3.9(c) and (d) and 7.3.10.

7.4 Unit: Storage Tanks (See Attachment 5 for details)

7.4.1 Description

Approximately 300 storage tanks at the source met the criteria for insignificant emission units and were listed in Section 3. The storage tanks addressed here do not meet the criteria as insignificant units. The tanks may store materials for any of the processes listed above (Section 7.1, 7.2, or 7.3).

Note: This narrative description is for informational purposes only and is not enforceable.

7.4.2 List of Emission Units and Air Pollution Control Equipment

See Attachment 5.

7.4.3 Applicable Provisions and Regulations

a. An "affected storage tank" for the purpose of these unit-specific conditions, is a storage tank described in Conditions 7.4.1 and 7.4.2 (Attachment 5).

b. Tank I.D. Nos. EPN-A and B are subject the HON (40 CFR 63 Subparts F and G). However, due to the size and vapor pressure of the material stored they are classified as Group 2 storage tanks and only subject to the recordkeeping requirements.

c. The following tanks, EPN-D, ME4, ME5, ME6, H1 and H2 are subject to a NSPS, 40 CFR 60 Subpart Kb. However, due to the size and vapor pressure of the material stored they are only subject to the recordkeeping requirements, 40 CFR 60.116b. See Condition 7.4.9.

d. The methanol, MCAA and xylene storage tanks listed in Attachment 5 are subject to a NESHAP, 40 CFR 63 Subpart FFFF, specifically 40 CFR 63.2470. Table 5 in Attachment 5 describes the control equipment (scrubbers) used on these tanks to comply with the NESHAP and Condition 7.4.8 describes the monitoring required for the six scrubber control devices used to control emissions from all of the Group 1 tanks (three control devices for the ME tanks, one for the AM tanks, one for the SME tank, and one for the BD tanks). 40 CFR 63.2470 in turn references Table 4 in Subpart FFFF which requires 95% control of HAP emissions. 40 CFR 63.2470 also references 40 CFR 63 Subpart SS, specifically §63.985 for requirements for a nonflare control device.

   Note that since storage tanks are effectively operating all of the time, §63.2470(d) allows for 240 hours/year of planned routine maintenance on the scrubber during which the limits in Table 4 are not required to be met.

7.4.4 Non-Applicability of Regulations of Concern

a. This permit is issued based on the affected storage tanks not being subject to 35 IAC 218.119 because none of the tanks store materials for which both the vapor pressure is greater than 0.5 psia and the tank capacity is greater than 40,000 gallons.

b. This permit is issued based on the affected storage tanks not being subject to 35 IAC 218.121 because the materials stored are not volatile petroleum liquids and the vapor pressure/capacity requirements are not met.

c. All of the affected tanks are regulated under 35 IAC 218 Subpart B, but are not subject to the control requirements of 35 IAC 218.122(b) which requires a permanently submerged loading pipe since the vapor pressure is less than 2.5 psia at 70 F. However, all of the tanks have submerged loading pipes, except the PA1 tank. The four tanks with vapor pressures above 2.5 store the material at an elevated temperature. At 70 F the vapor pressure is below 2.5 psia.

d. The control requirements of the HON NESHAP (40 CFR 63 Subpart G) do not apply to any of the tanks containing PA, xylene, o-xylene, ethylene oxide or propylene oxide because the tanks are classified as Group II vessels which do not require controls. Methanol is a HAP but is not part of a process subject to Subpart G.

e. All of the affected units identified in Condition 7.4.2 are not subject to 35 IAC 218 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes because 35 IAC 218.960(a)(1) and (b)(1)(A) both state that emission units that are regulated by 218 Subpart B are not regulated by Subpart RR. All of these units are regulated by Subpart B.

f. This permit is issued based on the MCAA storage tank (ST-1, 424-006) not being subject to the control requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing, 40 CFR 63, Subpart FFFF, because the maximum true vapor pressure of the liquid to be stored is less than 6.9 kPa (1.0 psia), so that the tank is a Group 2 storage tank and is not subject to emission control requirements. The Permittee has chosen to voluntarily install a scrubber and operate it during filling of the tank as the material has an odor.

g. The affected storage tanks are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because the affected 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. In addition, some of the tanks, listed in (e) above are subject to a NESHAP proposed after November 15, 1990, and thus exempt from CAM pursuant to 40 CFR 64.2(b)(1)(i).

7.4.5 Work Practices

a. The scrubber on the ethylene and propylene oxide storage tanks shall be in good working order whenever a tank car with high pressure is vented to it. The inventory of scrubber fluid in the scrubbant system shall be monitored continuously. Whenever the inventory reaches 75% full, the reservoir (T-543) shall be emptied and recharged with fresh acid. The scrubber fluid shall also be periodically checked for a minimum percent acid (which hydrolyzes the ethylene or propylene oxides to glycols) and maximum percent glycols. The periodicity of the fluid check shall be annually.

b. The scrubber used as a control device for the storage tanks that contain all or some methanol (those beginning with the initials ME or BD in Table 5 in the Attachments) shall be operated to reduce HAP emissions by 95% at all times except during planned routine maintenance not to exceed 240 hours/year so as to comply with the requirement in Table 4 of §63 Subpart FFFF.

7.4.6 Production and Emission Limitations

In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected storage tanks are subject to the following:

a. Emissions of VOM from the scrubber to which excess pressure is vented when Tanks AL-510 through 513 are being filled shall not exceed 0.1 tons/month and 0.5 tons/year. This limit is based on the maximum number of fillings of the tanks.

   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 00070058, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

b. Emissions of VOM and HAPs from the affected methanol/DMAPA storage tanks (ME4 and ME7 combined) after the scrubber control device shall not exceed 2.5 tons per year [T1].

c. Emissions of VOM from the affected methanol storage tanks (BD1-4 combined) after the scrubber control device shall not exceed 0.1 tons per month and 0.46 tons per year [T1].

d. 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].

e. The above limitations (b and c) were established in Permit 05040028 for the ME tanks and 05070058 for the BD tanks, 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].

f. Emissions of VOM from the MCAA storage tank shall not exceed 0.1 tons per year. The vapor pressure of the MCAA shall not exceed 0.15 psia. This limit is from Construction Permit 05120053. The scrubber shall be operated in accordance with the manufacturer's instructions whenever the tank is being filled.

7.4.7 Testing Requirements

Testing requirements are not set for the affected storage tanks. However, there are source-wide testing requirements in Condition 5.7 and general testing requirements in Condition 8.5.

7.4.8 Monitoring Requirements

a. NESHAP Monitoring for Scrubbers as required by 40 CFR 63.2450(k).

For Continuous Parameter Monitoring Systems the Permittee has chosen to monitor the inlet air flow rate, the inlet vapor temperature and the scrubbant flow rate.

b. The inventory of scrubber fluid used in the scrubber that controls ethylene oxide and propylene oxide emissions shall be continuously monitored. The fluid shall also be checked annually for a minimum percent acid (which hydrolyzes the ethylene or propylene oxides to glycols) and maximum percent glycols.

7.4.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for each

affected storage tanks to demonstrate compliance with Condition 5.6.1 and 7.4.3, pursuant to Section 39.5(7)(b) of the Act:

a. Maintain readily accessible records of the dimensions of each of the storage vessels and analysis of the capacity of each of the storage vessels [35 IAC 218.129(f) and 40 CFR 60.116b;

b. Design information for the tank showing the presence of a permanent submerged loading pipe;

c. Maintenance and repair records for the scrubbers and for the tanks, as related to the repair or replacement of the loading pipe;

d. The contents of each tank and its vapor pressure;

e. Dates of analysis of the scrubbant tank for acid and glycol content and dates of replacement/replenishment of the scrubbant used in the scrubber for the EO/PO tanks to demonstrate compliance with Condition 7.4.5;

f. Records of the monitoring variables required by Condition 7.4.8(a) and (b).

g. The throughput of each of the affected tanks, gal/ERMS season and gal/yr;

h. Records required by the NESHAP, both 40 CFR 63.2525 and/or §63.998. This includes the range of values of the monitored variables that indicated compliance during the initial compliance demonstration;

i. A copy of the Startup, Shutdown and Malfunction Plan required by 40 CFR 63.6(e)(3) for the tanks subject to the NESHAP, 40 CFR 63 Subpart FFFF; and

j. The annual VOM emissions from each affected tank based on the material stored, the tank throughput, and the applicable emission factors and formulas with supporting calculations, or TANKS program calculations.

7.4.10 <u>Reporting Requirements</u>

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of an affected storage tank with the permit requirements as follows, within 30 days, 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. Emissions of VOM from the affected storage tanks in excess of the limits specified in Condition 7.4.6 within 30 days of such occurrence.

ii. Storage of a VOL or VPL with a vapor pressure greater than 2.5 psia in any of the affected tanks that is not equipped with a submerged loading pipe; and

iii. Storage of any organic material in Tanks H1, H2, EPN-D, ME4, ME5 and ME6 with a vapor pressure greater than 4.0 psia that would make the tank subject to the control requirements of 40 CFR 60 Subpart Kb.

iv. Venting of excess pressure in the shipping vessel that fills either of tanks AL-510 thru 513 without going to the scrubber or the scrubber is not functioning properly.

b. NESHAP Reports and Notifications

Any notifications or reports required by 40 CFR 63.2515, 63.2520 or 63.999.

7.4.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to an affected storage tank 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:

Materials with a lower vapor pressure may be stored in the tanks.

7.4.12 Compliance Procedures

a. For the purpose of estimating VOM emissions from each affected tank, the current version of (or the mathematical computations used in) the TANKS3 program is acceptable.

b. Emissions from the methanol storage tank scrubbers may be calculated using the methodology described in condition 7.2.12(b). The efficiency of the scrubbers should be 95% instead of 98%.

c. Compliance with Conditions 7.4.3(b) and (c) is addressed by the records and reports required in Conditions 7.4.9 and 7.4.10.

d. Compliance with Conditions 7.4.5 is addressed by the records and reports required in Conditions 7.4.9(e) and 7.4.10.

e. Compliance with Condition 7.4.3(d) is addressed by the monitoring requirements of Condition 7.4.8(a) and the records and reports required in Condition 7.4.9 and 7.4.10.

f. Compliance with Conditions 7.4.6 is addressed by the records and reports required in Conditions 7.4.9(d), (g) and (j) and 7.4.10(a).

7.5 Fuel Combustion Devices

7.5.1 Description

Five boilers are used to produce process steam at the source. Two of the boilers use fuel oil as a backup fuel. The vaporizers use natural gas as a fuel to vaporize Dowtherm.

Note: This narrative description is for informational purposes only and is not enforceable.

7.5.2 List of Emission Units and Air Pollution Control Equipment[a]

Emission Unit	Description	Date Constructed	Maximum Firing Rate (mmBtu/hr)
EUIB-1	Gas-Fired Boiler #1	Before 1980	25
EUIB-2	Gas-Fired Boiler #2 Backup Fuel: Oil	Before 1980	25
EUIB-3	Gas Fired Boiler #3	Before 1980	53.5
EUIB-4	Gas-Fired Boiler #4R Backup Fuels: Distillate Oil and Biodiesel	2008	92
EUIB-5R	Gas-Fired Boiler #5R Backup Fuels: Distillate Oil and Biodiesel	2005	92
EUV-E2	Vaporizer E2	1989	14.4
EUV-PA1	Vaporizer PA1	1989	34.8
EUV-PA2, 3, and 4	Vaporizers Backup for PA1	1977	34.8
EUAH	Air Heater	Pre-1973	6.0

[a] None of the units have control equipment

7.5.3 Applicable Provisions and Regulations

a. The “affected fuel combustion devices” for the purpose of these unit-specific conditions, are fuel combustion devices described in Conditions 7.5.1 and 7.5.2.

b. NSPS Standards for new affected boilers #4R and 5R

i. NSPS

A. The new Boilers #4R and 5R is subject to a New Source Performance Standard (NSPS) for Small Industrial - Commercial - Institutional Steam Generating Units, 40 CFR 60, Subparts A and Dc.

B. Pursuant to the NSPS, 40 CFR 60.42c(d), sulfur dioxide emissions from the affected boiler shall not exceed 0.5 lb/mmBtu or the sulfur

content of the fuel oil burned in the affected boiler shall be less than 0.5 percent by weight.

Note: The SO_2 emissions from the affected boiler are subject to a more stringent standard of Condition 7.5.3(c), pursuant to 35 IAC 214.122(b)(2) and 214.162.

C. Pursuant to the NSPS, 40 CFR 60.43c(c), opacity from the affected boiler shall not exceed 20 percent, as measured on a six minute average, except for one six minute period per hour of not more than 27 percent.

D. At all times, the Permittee shall maintain and operate the boiler in a manner consistent with good air pollution control practice for minimizing emissions, as required by the NSPS, 40 CFR 60.11(d).

c. Pursuant to 35 IAC, Chapter B, Subchapter C, emissions from the affected boilers as identified in the table shall not exceed the following standards, which apply on an hourly basis:

Pollutant	Standard	Limit
SO_2 (All boilers)	35 IAC 214.122(b)(2) and 214.162[a]	0.3 lb/mmBtu
PM (All boilers)	35 IAC 212.206 and 212.207	0.1 lb/mmBtu[a]
CO (All boilers)	35 IAC 216.121	200 ppm, @ 50% excess air
Opacity (Boilers 1-5)[b]	35 IAC 212.123(a)	30 percent[c]

[a] Limit is only applicable to emissions attributable to burning of liquid fuel.

[b] While the limit applies to all the boilers, #4R and 5R are subject to a more stringent standard above in Condition 7.5.3(b)(i)(C).

[c] Limit goes up to 60 percent for 8 minutes each hour for a maximum of three times each 24 hour period per §212.123(b) but the standard in Condition 7.5.3(b)(i)(C) only goes up to 27 percent for 6 minutes.

7.5.4 <u>Non-Applicability of Regulations of Concern</u>

a. The five affected boilers, the vaporizers, and air heater are not subject to 35 IAC 217.141, emissions of NO_x from existing fuel combustion emission units in major

metropolitan areas, because the actual heat input of each affected boiler is less than 73.2 MW (250 mmBtu/hr).

b. Pursuant to 35 IAC 218.303, fuel combustion emission units are not subject to 35 IAC 218.301, Use of Organic Material.

c. All of the fuel combustion units identified in Condition 7.5.2 are not subject to the control requirements of 35 IAC 218 Subpart RR, Miscellaneous Organic Chemical Manufacturing Processes because 35 IAC 218.960(g) states that fuel combustion units are not subject to the control requirements of Subpart RR.

d. This permit is issued based on the Permittee not being required to operate a continuous opacity monitor for the affected boilers #4R and 5R as provided by the NSPS, 40 CFR 60.47c(a), because the boiler does not burn coal, residual oil, or wood.

e. This permit is issued based on the Permittee using fuel supplier certification, as described under 40 CFR 60.48c(f)(1), to demonstrate compliance with the standard in Condition 7.5.3(b)(i)(B) for sulfur content of fuel, rather than continuous emissions monitoring for SO_2, as allowed by the NSPS, 40 CFR 60.46c(h). This is for boilers #4R and 5R that are subject to NSPS.

f. The affected fuel combustion devices are not 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. In addition, each individual boiler does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

7.5.5 Control Requirements and Work Practices

a. Natural gas shall be the only fuel fired in Boiler Nos. 1 and 3.

b. Natural gas, distillate oil and biodiesel, shall be the only fuels fired in the Boiler Nos. 2, 4R and 5R [T1, 05080081 and 07100072].

c. The Permittee shall maintain the affected boiler in accordance with good air pollution control practice to assure proper functioning of equipment and minimize malfunctions, including maintaining the boiler in accordance with written procedures developed for this purpose [T1, 07100072].

7.5.6 Production and Emission Limitations

In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected fuel combustion devices are subject to the following:

a. i. The nominal rated heat input capacity of the affected Boiler Nos. 4R and 5R shall not exceed 92 mmBtu/hour(each) [T1, 05080081 and 07100072].

ii. The usage of fuels by the affected boiler (EUIB-4R) and the boiler EUIB-5R, combined shall not exceed 1,780 million scf "equivalent" per year, total. For this purpose, use of 1,000 gallons of liquid fuel (distillate oil and biodiesel) shall be considered equivalent to use of 555,556 scf of natural gas [T1, 07100072].

iii. The usage of distillate fuel oil and biodiesel fuel by the affected boiler (EUIB-4R) and the boiler EUIB-5R, combined shall not exceed 1,440,000 gallons per year, total [T1, 07100072].

b. Emissions from the affected Boiler No. 5R shall not exceed the following limits:

Pollutant	Emissions (lb/hour)[a]	Emissions (ton/year)[b]
PM	2.74	12.0
VOM	0.4	1.8
SO_2	0.1/14.2	21.6
NO_x	3.3/14.2	30.8
CO	20.7/23.7	95.3

[a] For pollutants for which there are two values, the first number is gas only and the second oil only. A combination of the two may be burned. Although expressed as an hourly limit, emissions may be calculated and recorded monthly.

[b] The yearly rate was determined assuming fuel oil is used for 3000 hours. For SO_2 the sulfur content of distillate oil was used.

These limits are based on the use of No. 2 fuel oil as the main fuel oil. If biodiesel is used the emissions may be calculated using the sulfur content of the oil as determined by testing rather than the normal sulfur content of Diesel. Diesel fuels with lower sulfur content sulfur are being made for engines and if that low sulfur oil is used a different emission factor may be used to calculate SO_2 emissions.

c. Short-term emissions from the affected boiler #4R shall not exceed the following limits.

Pollutant	Natural Gas (Lbs/Hour)	Distillate Oil/Biodiesel Fuel (Lbs/Hour)
NO_x	3.3	13.1
CO	7.7	3.3
PM/PM_{10}	0.5	2.7
VOM	0.4	0.4
SO_2	0.1	28.4
Individual HAP[a]	0.2	0.2
Total HAP	0.4	0.4

[a] Individual HAP refers to individual pollutants, such as Formaldehyde, Benzene, Toluene, Hexane, etc.

d. Annual emissions from the affected boiler (EUIB-4R) and the boiler EUIB-5R, combined shall not exceed the following limits. Compliance with these limitations and other annual limits shall be determined from a running total of 12 months of data [T1, 07100072].

Pollutant	Emissions (Tons/Year)[b]
NO_x	32.0
CO	74.8
PM/PM_{10}	6.7
VOM	3.7
SO_2	31.8
Individual HAP	1.9
Total HAP	3.7

[b] Annual emission limits are based on highest emission factors between natural gas and distillate oil firing for the boilers.

e. 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).

f. The above limitations were established in Construction Permits 05080081 and 07100072. These limits document that the construction and/or modification addressed in the aforementioned permit was a natural minor increase and does not constitute a major modification pursuant to Title I of the CAA, specifically the federal rules for PSD [T1].

7.5.7 Testing Requirements

a. For the Nos. 4R and 5R Boilers the Permittee shall follow the NESHAP testing requirements of 40 CFR 63.7515, 63.7520 and 63.7521.

b. In lieu of continuous emissions monitoring for SO_2, the Permittee has agreed to use fuel supplier certification, as allowed by the NSPS, 40 CFR 60.48c(f). If the fuel burned is biodiesel that is supplied internally (i.e. manufactured on-site), the Permittee must certify the sulfur content by analyzing it using appropriate ASTM methodology. Note that although the NSPS rule specified above would normally only apply to the one boiler (No. 5) that is subject to NSPS, the same certification shall be used for the four other boilers that are not subject to NSPS.

c. The Illinois EPA shall be allowed to sample all fuel oils stored at the source in order to test for sulfur content or may require the Permittee or its fuel supplier to test for sulfur content.

7.5.8 Monitoring Requirements

Monitoring requirements are not set for the affected fuel combustion devices. However, there are provisions for source-wide monitoring requirements set forth in Condition 5.8 of this permit. The testing required by Condition 7.5.7 is sometimes classified as monitoring.

7.5.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for the affected fuel combustion devices to demonstrate compliance with Condition 5.6.1, 7.5.3, 7.5.5, 7.5.6 and 7.5.7, pursuant to Section 39.5(7)(b) of the Act:

a. The Permittee shall fulfill applicable recordkeeping requirements of the NSPS, 40 CFR 60.7 and 60.48c for Boilers Nos. 4R and 5R;

b. The rated maximum design heat input capacity of Boiler Nos. 4R and 5R (mmBtu/hr) with supporting documentation;

c. Total natural gas usage for the affected boilers, vaporizers, and air heater (ft^3/year). A separate record is required for Boilers 4R and 5R;

d. Total distillate fuel oil and biodiesel usage for the affected boilers (gallons/year). A separate record is required for Boilers 4R and 5R;

e. Supplier certification of the sulfur content (in wt. %) for each shipment of distillate fuel oil used in the affected boilers;

f. Supplier or internal lab certification of the sulfur content (in wt. %) for each transfer of biodiesel from product storage to boiler fuel storage;

g. Heat content of the fuels (Btu/ft^3 or Btu/gallon) being fired, with supporting documentation;

h. The maximum chlorine content of biodiesel fuel, lb/million Btu, with supporting calculation;

i. Records for all opacity measurements made in accordance with USEPA Method 9 for the affected boiler that it conducts;

j. Records sufficient to demonstrate compliance with the limits in Condition 7.5.6. As noted the record for the hourly limit may be kept monthly; and

k. Annual aggregate NO_x, PM, SO_2, and VOM emissions from the affected boilers, based on fuel consumption and the applicable emission factors, with supporting calculations.

7.5.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of the affected fuel combustion devices 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. Emissions of any pollutant from the affected Boiler No. 5R in excess of the limits specified in Condition 7.5.6 within 30 days of such occurrence.

ii. Operation of the affected fuel combustion devices in excess of the limits specified in Condition 7.5.3 or 7.5.6, within 30 days of such occurrence.

b. NSPS Reporting and Notification Requirements

	NSPS Reporting and Notification
Subpart A	§60.19
Subpart Dc	§60.48c

7.5.11 Operational Flexibility/Anticipated Operating Scenarios

Operational flexibility is not set for the affected combustion emission devices. However, there are provisions for source-wide operational flexibility set forth in Condition 5.11 of this permit.

7.5.12 Compliance Procedures

a. Compliance with Conditions 7.5.3(b) and (c) are addressed by the testing requirements of Condition 7.5.7, the records required in Condition 7.5.9 and the reporting requirements of Condition 7.5.10(b).

b. Compliance with Conditions 7.5.5 and 7.5.6 are addressed by the records required in Condition 7.5.9.

c. Emissions from the fuel combustion devices shall be calculated standard emission factors as listed below or from emission tests conducted after startup.

i. A. Emission factors for the affected boiler when fired by natural gas:

Pollutant	Emission Factors (lb/mmscf)
VOM	5.5
PM	7.6
SO_2	0.6
NO_x	100
CO	84

The emission factors (lb/mmscf) are for Natural Gas-Fired Small Boilers (<100 mmBtu/hr Heat Input) from AP-42 Section 1.4 (dated 3/98).

B. Emission formula for the affected boiler when fired by natural gas:

(Boiler Emissions, lb) = (The Appropriate Emission Factor, lb/mmscf) x (Natural Gas Usage, mmscf)

ii. A. Emission factors for the affected boiler when fired by distillate fuel oil or biodiesel:

Pollutant	Emission Factors (lb/1,000 gal)
VOM	0.2
PM	2
SO_2	142(S)
NO_x	Emissions Test
CO	Emissions Test

The emission factors (lb/1000 gal) are for Distillate Oil Fired Small Boilers (<100 mmBtu/hr Heat Input) from AP-42 Section 1.3 (dated 9/98). Note: (S) is the Sulfur content of the distillate fuel oil (wt.%).

B. Emission formula for the affected boiler when fired by distillate fuel oil:

(Boiler Emissions, lb) = (The Appropriate Emission Factor, lb/1,000 gal) x (Distillate Fuel Oil Consumed (1,000 gal))

7.6 Non-Manufacturing Operations

7.6.1 Description

This section covers operations at the source that are not manufacturing product and are not fuel combustion units such as cooling towers and a wastewater treatment plant.

Note: This narrative description is for informational purposes only and is not enforceable.

7.6.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Date Constructed	Emission Control Equipment
EULS	Lime Silo (445-050)	1987	Loading: Filter (694-022) Unloading: Cyclone (674-025
EUP	Dry Para-Phthalic Acid Storage Silo and Slurry Mixing Tank	2006	Filter on each (silo and tank)
WWTP	Wastewater Treatment Plant including Equalization, Aeration Tanks, Clarifier and Sludge Tanks		None
CT	Cooling Towers (6)		None
UNL	SO_3 Unloading System		Absorber and Demister

7.6.3 Applicable Provisions and Regulations

a. An “affected silos” for the purpose of these unit-specific conditions, is a silo that receives lime from a transport truck, stores the lime, and then air conveys it to a neutralization process (EUN) or receives para-phthalic acid and transfers it to a slurry tank is identified in Condition 7.2.2. The silos are described in Conditions 7.6.1 and 7.6.2.

   i. This affected silos and transfer operations emit only PM and are subject to the PM rule (35 IAC 212.321 in subpart L) for which the allowable is calculated using the table in Attachment 2. The allowable limits for the para-phthalic acid storage tank and

slurry feed tank in Condition 7.6.6 are more stringent than the allowable pursuant to Subpart L.

ii. This affected silos and transfer operations are subject to 35 IAC 212.123. Pursuant to 35 IAC 212.123(a), 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, except as allowed by 35 IAC 212.123(b) and 212.124.

b. An "affected wastewater treatment plant" for the purpose of these unit specific conditions is an industrial wastewater treatment plant identified in Conditions 7.6.1 and 7.6.2. The units which compose the WWTP, the treatment plant are individually subject to 35 IAC 218.301.

c. An "affected cooling tower" for the purpose of these unit specific conditions is a cooling tower identified in Conditions 7.6.1 and 7.6.2. The units which compose the cooling tower are individually subject to Condition 5.3.2(b).

d. An "affected SO_3 unloading system" for the purpose of these unit specific conditions is a system for unloading and storing SO_3 and identified in Conditions 7.6.1 and 7.6.2. The system emits SO_2 and is subject to 35 IAC 214.301.

7.6.4 Non-Applicability of Regulations of Concern

a. The wastewater treatment plant is not subject to 35 IAC 218 Subpart TT because industrial wastewater treatment plants are exempted from inclusion in the potential to emit for units subject to Subpart TT pursuant to §218.980(b)(2)(B). Therefore, the potential to emit from all units subject to Subpart TT is less than 25 tons/year and an emission unit is considered not regulated by Subpart TT if it is not subject to the limits of that Subpart.

b. The cooling tower is not subject to the control requirements of 35 IAC 218.986(d) because the potential to emit from all units subject to Subpart TT is less than 25 tons/year.

c. Neither the wastewater treatment plant or the cooling tower are subject to the HON or MON NESHAPs because the concentration of methanol and all other HAPs are not sufficient to classify the wastewater stream as a Group I wastewater stream and the cooling tower does not emit any HAPs listed on Table 4 of 40 CFR 63 Subpart F.

d. The affected units listed above are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major

Stationary Sources, because the affected units are 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.

7.6.5 Control Requirements and Work Practices

The filter and cyclone on the lime silo and the filter on the para-phthalic acid storage silo and slurry tank shall be operated to meet compliance with Condition 7.6.3(a). Material shall not be transferred into the silos unless the filters are in proper operating condition and operating.

7.6.6 Production and Emission Limitations

a. In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected SO_3 unloading system with absorber/demister control system is subject to the following:

   Emissions of SO_2 shall not exceed 0.05 lb/hr and 0.22 ton/yr [T1].

   The above limitations were established in Construction Permit 98030058. These limits document that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

b. In addition to Condition 5.3.2 and the source-wide emission limitations in Condition 5.6, the affected para-phthalic acid storage silo and slurry tank are subject to the following:

   Emissions of PM shall not exceed 0.1 lb/hr and 0.44 ton/yr [T1].

   The above limitations were established in Construction Permit 05120048. These limits document that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

7.6.7 Testing Requirements

Testing requirements are not set for the affected units listed above. However, there are source-wide testing requirements in Condition 5.7 and general testing requirements in Condition 8.5.

7.6.8 Monitoring Requirements

Monitoring requirements are not set for the affected units listed above. However, there are provisions for source-wide monitoring requirements set forth in Condition 5.8 of this permit.

7.6.9 Recordkeeping Requirements

In addition to the records required by Condition 5.9, the Permittee shall maintain records of the following items for the affected emission units to demonstrate compliance with Conditions 5.6.1, 7.1.3 and 7.1.5, pursuant to Section 39.5(7)(b) of the Act:

a. Wastewater treatment throughput (gal/day).

b. Emissions of SO_2 to demonstrate compliance with Condition 7.6.6. Only the annual limit needs to be verified.

c. Amount of dry para-phthalic acid transferred to the storage silo and amount transferred to the slurry tank (each, tons/mo and tons/yr).

d. Annual emissions of PM, VOM and SO_2.

e. A record verifying that the HAP content of the wastewater streams classify them as a Group 2 wastewater streams.

7.6.10 Reporting Requirements

a. Reporting of Deviations

The Permittee shall promptly notify the Illinois EPA, Air Compliance Unit, of deviations of the affected units listed above 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. Emissions of sulfur dioxide from the affected unloading system in excess of the limits specified in Condition 7.6.6, within 30 days of such occurrence.

ii. Emissions of PM from transfer into or out of the silos in excess of the limits in Condition 7.6.3(a).

iii. The emissions increase such that the wastewater treatment streams become Group 1 units and therefore subject to the HON or MON NESHAP requirements.

7.6.11 Operational Flexibility/Anticipated Operating Scenarios

Operational flexibility is not set for the affected emission units listed above. However, there are provisions for source-wide operational flexibility set forth in Condition 5.11 of this permit.

7.6.12 Compliance Procedures

a. VOM emissions from the wastewater treatment plant shall be calculated by use of the Water 9 program by the USEPA.

b. Compliance with Conditions 7.6.3(a)-(d) and 7.6.6 is addressed by the records and reports required in Condition 7.6.9 and 7.6.10.

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 does not extend to applicable requirements which are promulgated after _____Error! Bookmark not defined. (the date of issuance of the proposed 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].

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 if applicable test methods are not specified by the applicable regulations or otherwise identified in the conditions of this permit. 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 Conditions 8.6.3 and 8.6.4.

8.6 Reporting Requirements

8.6.1 Monitoring Reports

Reports summarizing required monitoring as specified in the conditions of this permit shall be submitted to the Illinois EPA

every six months as follows, unless more frequent submittal of such reports is required in Sections 5 or 7 of this permit [Section 39.5(7)(f) of the Act]:

Monitoring Period	Report Due Date
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 determinations of emissions and operation that are intended to be made, including sampling and monitoring locations;

e. The test method(s) that 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

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. Unless otherwise specified in the particular provision of this permit or in the written instructions distributed by the Illinois EPA for particular reports, reports and notifications shall be sent to the Illinois EPA – Air Compliance Unit with a copy sent to the Illinois EPA – Air Regional Field Office.

b. As of the date of issuance of this permit, the addresses of the offices that should generally be utilized for the submittal of reports and notifications are as follows:

i. Illinois EPA – Air Compliance Unit

Illinois Environmental Protection Agency
Bureau of Air
Compliance & Enforcement Section (MC 40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Illinois EPA – Air Quality Planning Section

Illinois Environmental Protection Agency
Bureau of Air
Air Quality Planning Section (MC 39)
P.O. Box 19276
Springfield, Illinois 62794-9276

iii. Illinois EPA – Air Regional Field Office

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

iv. USEPA Region 5 – Air Branch

USEPA (AR – 17J)
Air & Radiation Division
77 West Jackson Boulevard
Chicago, Illinois 60604

v. Permit applications should be addressed to the Air Permit Section. As of the date of issuance of this permit, the address of the Air Permit Section is as follows:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section (MC 11)
P.O. Box 19506
Springfield, Illinois 62794-9506

8.7 Title I Conditions

Notwithstanding the expiration date on the first page of this CAAPP permit, Title I conditions in this permit, which are identified by a T1, T1N, or T1R designation, remain in effect until such time as the Illinois EPA takes action to revise or terminate them in accordance with applicable procedures for action on Title I conditions. This is because these conditions either: (a) incorporate conditions of earlier permits that were issued by the Illinois EPA pursuant to authority that includes authority found in Title I of the CAA (T1 conditions), (b) were newly established in this CAAPP permit pursuant to authority that includes such Title I authority (T1N conditions), or (c) reflect a revision or combination of conditions established in this CAAPP permit (T1R conditions). (See also Condition 1.5.)

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.

9.1.2 In particular, this permit does not alter or affect the following [Section 39.5(7)(j)(iv) of the Act]:

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, pursuant to Section 39.5(7)(j) and (p) of the Act, 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

iii. 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, or 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 this permit provides for such continued operation consistent with the Act and applicable Illinois Pollution Control Board regulations [Section 39.5(6)MACT 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 there under.

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 as may be required by law and in accordance with constitutional limitations, the Permittee shall allow the Illinois EPA, or an authorized representative to perform the following [Sections 4 and 39.5(7)(a) and (p)(ii) of the Act]:

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 applicable requirements; 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 regulated 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)(o)(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. At 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 including any logs, plans, procedures, or instructions required to be kept 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, Air Quality Planning 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 Unit, 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 and applicable regulations [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included as Attachment 1 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 [Section 39.5(7)(k) of the Act]:

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.

Note: For this purpose, emergency means a situation arising from sudden and reasonably unforeseeable events beyond the control of the source, as further defined by Section 39.5(7)(k)(iv) of the Act.

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 [Section 39.5(7)(k)(iv) of the Act].

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, revoked, reopened and reissued, or terminated for cause in accordance with applicable provisions of Section 39.5 of the Act. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, 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 that inaccurate statement were made in establishing the emission standards or limitations, or other terms or conditions of this permit.

d. The Illinois EPA or USEPA determines that this permit must be revised or revoked to ensure compliance with the applicable requirements.

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 and reissuance under Section 39.5(15) of the Act, pursuant to Sections 39.5(5)(e) and (i) 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. In the event of a challenge to any portion of the permit, other portions of the permit may continue to be in effect. Should any portion of this permit be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected and the rights and obligations of the Permittee shall be construed and enforced as if this permit did not contain the particular 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

Upon the expiration of this permit, if the source is operated, it shall be deemed to be operating without a permit unless a timely and complete CAAPP application has been submitted for renewal of this permit. However, if a timely and complete application to renew this CAAPP permit has been submitted, the terms and all conditions of this CAAPP permit will remain in effect until the issuance of a renewal permit [Section 39.5(5)(l) and (o) of the Act].

Note: Pursuant to Sections 39.5(5)(h) and (n) of the Act, upon submittal of a timely and complete renewal application, the permitted source may continue to operate until final action is taken by the Illinois EPA on the renewal application, provided, however, that this protection shall cease if the applicant fails to submit any additional information necessary to evaluate or take final action on the renewal

application as requested by the Illinois EPA in writing. For a renewal application to be timely, it must be submitted no later than 9 months prior to the date of permit expiration.

9.15 General Authority for the Terms and Conditions of this Permit

The authority for terms and conditions of this permit that do not include a citation for their authority is Section 39.5(7)(a) of the Act, which provides that the Illinois EPA shall include such provisions in a CAAPP permit as are necessary to accomplish the purposes of the Act and to assure compliance with all applicable requirements. Section 39.5(7)(a) of the Act is also another basis of authority for terms and conditions of this permit that do include a specific citation for their authority.

Note: This condition is included in this permit pursuant to Section 39.5(7)(n) of the Act.

10.0 ATTACHMENTS

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: _____

Attachment 2 Emissions of Particulate Matter from Process Emission Units

a. New Process Emission Units for Which Construction or Modification Commenced On or After April 14, 1972 [35 IAC 212.321].

i. 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 MACT of 35 IAC 212.321 [35 IAC 212.321(a)].

ii. Interpolated and extrapolated values of the data in subsection MACT of 35 IAC 212.321 shall be determined by using the equation [35 IAC 212.321(b)]:

$$E = A(P)^B$$

where:

P = Process weight rate; and
E = Allowable emission rate; and,

iii. Up to process weight rates of 408 Mg/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lb/hr
A	1.214	2.54
B	0.534	0.534

iv. For process weight rate greater than or equal to 408 Mg/hr (450 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lb/hr
A	11.42	24.8
B	0.16	0.16

v. Limits for Process Emission Units For Which Construction or Modification Commenced On or After April 19, 1972 [35 IAC 212.321MACT]:

Metric		English	
P	E	P	E
Mg/hr	kg/hr	T/hr	lb/hr
0.05	0.25	0.05	0.55
0.1	0.29	0.10	0.77
0.2	0.42	0.2	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
9.0	3.9	10.00	8.70
13.0	4.8	15.00	10.80
18.0	5.7	20.00	12.50
23.0	6.5	25.00	14.00
27.0	7.1	30.00	15.60
32.0	7.7	35.00	17.00
36.0	8.2	40.00	18.20
41.0	8.8	45.00	19.20
45.0	9.3	50.00	20.50
90.0	13.4	100.00	29.50
140.0	17.0	150.00	37.00
180.0	19.4	200.00	43.00
230.0	22.0	250.00	48.50
270.0	24.0	300.00	53.00
320.0	26.0	350.00	58.00
360.0	28.0	400.00	62.00
408.0	30.1	450.00	66.00
454.0	30.4	500.00	67.00

b. Existing Process Emission Units for Which Construction or Modification Prior to April 14, 1972 [35 IAC 212.322].

i. 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 MACT of 35 IAC 212.322 [35 IAC 212.322(a)].

ii. Interpolated and extrapolated values of the data in subsection MACT of 35 IAC 212.321 shall be determined by using the equation [35 IAC 212.322(b)]:

$$E = C + A(P)^B$$

where:

P = Process weight rate; and
E = Allowable emission rate; and,

iii. Up to process weight rates up to 27.2 Mg/hr (30 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lb/hr
A	1.985	4.10
B	0.67	0.67
C	0	0

iv. For process weight rate in excess of 27.2 Mg/hr (30 T/hr):

	Metric	English
P	Mg/hr	T/hr
E	kg/hr	lb/hr
A	25.21	55.0
B	0.11	0.11
C	- 18.4	- 40.0

v. Limits for Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972 [35 IAC 212.322MACT]:

Metric		English	
P	E	P	E
Mg/hr	kg/hr	T/hr	lb/hr
0.05	0.27	0.05	0.55
0.1	0.42	0.10	0.87
0.2	0.68	0.2	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
9.0	8.7	10.00	19.20
13.0	11.1	15.00	25.20
18.0	13.8	20.00	30.50
23.0	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

Attachment 3 Compliance Assurance Monitoring (CAM) Plan

Table 3A. PSEU Designation:	Flaker
Significant Emission Unit Section:	7.1
Pollutant:	PM

Indicators:	#1: Visual Observation of exhaust point

GENERAL CRITERIA

THE MONITORING APPROACH USED TO MEASURE THE INDICATORS:	The exhaust point will be observed during daylight hours when the unit is operating
THE INDICATOR RANGE WHICH PROVIDES A REASONABLE ASSURANCE OF COMPLIANCE:	There should be no visible emissions
QUALITY IMPROVEMENT PLAN (QIP) THRESHOLD LEVELS:	Quarterly preventative maintenance inspection of the bags and baghouse.

PERFORMANCE CRITERIA

THE SPECIFICATIONS FOR OBTAINING REPRESENTATIVE DATA:	Observation from the ground near the baghouse
VERIFICATION PROCEDURES TO CONFIRM THE OPERATIONAL STATUS OF THE MONITORING:	N/A
QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PRACTICES THAT ENSURE THE VALIDITY OF THE DATA:	N/A
THE MONITORING FREQUENCY:	Weekly
THE DATA COLLECTION PROCEDURES THAT WILL BE USED:	A log of weekly readings shall be maintained
THE DATA AVERAGING PERIOD FOR DETERMINING WHETHER AN EXCURSION OR EXCEEDANCE HAS OCCURRED:	N/A

Table 3B1. PSEU Designation:	Drum Dryers
Significant Emission Unit Section:	7.2
Pollutant:	PM

Indicators:	#1: Fresh Water Flow to Scrubber	#2: Scrubbant Flow to Spray Nozzles
GENERAL CRITERIA		
THE MONITORING APPROACH USED TO MEASURE THE INDICATORS:	Flow will be read manually and recorded in a log	Flow will be read manually and recorded in a log
THE INDICATOR RANGE WHICH PROVIDES A REASONABLE ASSURANCE OF COMPLIANCE:	Greater than 8 gal/min	Greater than 235 gal/min.
QUALITY IMPROVEMENT PLAN (QIP) THRESHOLD LEVELS:	Three excursions in a six month period	Three excursions in a six month period
PERFORMANCE CRITERIA		
THE SPECIFICATIONS FOR OBTAINING REPRESENTATIVE DATA:	A flow indicator in the water line with a range of 2 to 15 gal/min	A flow indicator in the supply line to the nozzles with a range of 0 to 300 gpm
VERIFICATION PROCEDURES TO CONFIRM THE OPERATIONAL STATUS OF THE MONITORING:	Readings shall be in the normal range	Readings shall be in the normal range
QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PRACTICES THAT ENSURE THE VALIDITY OF THE DATA:	The device shall be in the Permittee's Preventative Maintenance Manual. PM programs set the maintenance frequency	The device shall be in the Permittee's Preventative Maintenance Manual. PM programs set the maintenance frequency
THE MONITORING FREQUENCY:	Readings shall be taken and logged every four hours during operation of the emission unit	Readings shall be taken and logged every four hours during operation of the emission unit
THE DATA COLLECTION PROCEDURES THAT WILL BE USED:	A log of the manual readings shall be maintained	A log of the manual readings shall be maintained
THE DATA AVERAGING PERIOD FOR DETERMINING WHETHER AN EXCURSION OR EXCEEDANCE HAS OCCURRED:	A daily average of the readings shall be calculated and recorded	A daily average of the readings shall be calculated and recorded

Table 3B2. PSEU Designation:	Drum Dryers, Alternate
Significant Emission Unit Section:	7.2
Pollutant:	PM

Indicators:	#1: Fresh Water Flow to Scrubber	#2: Scrubbant Pressure at Spray Nozzles
GENERAL CRITERIA		
THE MONITORING APPROACH USED TO MEASURE THE INDICATORS:	Flow will be read manually and recorded in a log	Pressure will be read manually and recorded in a log
THE INDICATOR RANGE WHICH PROVIDES A REASONABLE ASSURANCE OF COMPLIANCE:	Greater than 8 gal/min	Pressure in range of 10-30 psig.
QUALITY IMPROVEMENT PLAN (QIP) THRESHOLD LEVELS:	Three excursions in a six month period	Three excursions in a six month period
PERFORMANCE CRITERIA		
THE SPECIFICATIONS FOR OBTAINING REPRESENTATIVE DATA:	A flow indicator in the water line with a range of 2 to 15 gal/min	A pressure gauge in the supply line to the nozzles with a range of 0 to 60 psig
VERIFICATION PROCEDURES TO CONFIRM THE OPERATIONAL STATUS OF THE MONITORING:	Readings shall be in the normal range	Readings shall be in the normal range
QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PRACTICES THAT ENSURE THE VALIDITY OF THE DATA:	The device shall be in the Permittee's Preventative Maintenance Manual. PM programs set the maintenance frequency	The device shall be in the Permittee's Preventative Maintenance Manual. PM programs set the maintenance frequency
THE MONITORING FREQUENCY:	Readings shall be taken and logged every four hours during operation of the emission unit	Readings shall be taken and logged every four hours during operation of the emission unit
THE DATA COLLECTION PROCEDURES THAT WILL BE USED:	A log of the manual readings shall be maintained	A log of the manual readings shall be maintained
THE DATA AVERAGING PERIOD FOR DETERMINING WHETHER AN EXCURSION OR EXCEEDANCE HAS OCCURRED:	A daily average of the readings shall be calculated and recorded	A daily average of the readings shall be calculated and recorded

Table 3C. PSEU Designation:	EUAM (The Reactors, 2K and 7K, are connected to a single scrubber, S-803)
Significant Emission Unit Section:	7.2
Pollutant:	VOM

Indicators:	#1: **Scrubber water flow rate**	#2: Scrubber inlet gas flow rate
GENERAL CRITERIA		
THE MONITORING APPROACH USED TO MEASURE THE INDICATORS:	Water flow is logged in the PLC.	Inlet gas flow is logged in the PLC.
THE INDICATOR RANGE WHICH PROVIDES A REASONABLE ASSURANCE OF COMPLIANCE:	Flow is greater than 2.4 gpm.	Flow is less than 100 scfm.
QUALITY IMPROVEMENT PLAN (QIP) THRESHOLD LEVELS:	N/A	N/A
PERFORMANCE CRITERIA		
THE SPECIFICATIONS FOR OBTAINING REPRESENTATIVE DATA:	Flow monitor is in a straight run of pipe into the scrubber.	Flow monitor is in a straight run of pipe downstream of the condenser
VERIFICATION PROCEDURES TO CONFIRM THE OPERATIONAL STATUS OF THE MONITORING:	Faulty signal is indicated at the PLC	Faulty signal is indicated at the PLC
QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PRACTICES THAT ENSURE THE VALIDITY OF THE DATA:	Faulty signals will be addressed as soon as possible, i.e. before a new batch is begun	Faulty signals will be addressed as soon as possible, i.e. before a new batch is begun
THE MONITORING FREQUENCY:	Data is logged every minute. Compliance retain 15 minute intervals	Data is logged every minute. Compliance retain 15 minute intervals
THE DATA COLLECTION PROCEDURES THAT WILL BE USED:	The PLC data will be transferred to a spreadsheet	The PLC data will be transferred to a spreadsheet
THE DATA AVERAGING PERIOD FOR DETERMINING WHETHER AN EXCURSION OR EXCEEDANCE HAS OCCURRED:	Monthly averages will be made from the compliance spreadsheet.	Monthly averages will be made from the compliance spreadsheet and used to calculate monthly emissions

Attachment 4 Guidance

The Illinois has prepared guidance for sources on the Clean Air Act Permit Program (CAAPP) that is available on the Internet site maintained by the Illinois EPA, www.epa.state.il.us. This guidance includes instructions on applying for a revision or renewal of the CAAPP permit.

Guidance On Revising A CAAPP Permit:

www.epa.state.il.us/air/caapp/caapp-revising.pdf

Guidance On Renewing A CAAPP Permit:

www.epa.state.il.us/air/caapp/caapp-renewing.pdf

The application forms prepared by the Illinois EPA for the CAAPP are also available from the Illinois EPA's Internet site:

www.epa.state.il.us/air/caapp/index.html

These CAAPP application forms should also be used by a CAAPP source when it applies for a construction permit. For this purpose, the appropriate CAAPP application forms and other supporting information, should be accompanied by a completed Application For A Construction Permit form (199-CAAPP) and Fee Determination for Construction Permit Application form (197-FEE):

www.epa.state.il.us/air/caapp/199-caapp.pdf
www.epa.state.il.us/air/permits/197-fee.pdf

ATTACHMENT 5 Details of Storage Tanks

TABLE 5

Tank I.D. No.	Tank Equip. No.	Material	MACT Group 1 or Group 2	Year Built /Modified	Nominal Volume (Gal)	Vapor Pressure (psia)[a]	Control Equipment[b]
PA1	TK 445-038	Phthalic Anhydride (PA)	Group 2	1977	29,000	0.37	None
ME1	TK 441-015	Methanol	Group 1	Pre-1973	21,000	2.94	Scrubber S-102
ME2	TK 441-027	Methanol	Group 1	Pre-1973	12,000	8.5	Scrubber S-102
ME3	TK 441-281	Methanol	Group 1	Pre-1973	15,000	8.5	Scrubber S-102
ME4	TK 441-458	Methanol/DMAPA	Group 1	1997/2005	20,000	2.0	Scrubber CDST-ME4 (S-150)
ME5	TK 441-421	Methanol/Water	Group 1	1989	30,500	0.9	Scrubber S-101
ME6	TK 443-416	Methanol/Water	Group 1	1989/2005	30,500	2.94	Scrubber S-101
ME7	TK 441-422	Methanol/DMAPA	Group 1	1989/2005	30,500	2.7	Scrubber CDST-ME4 (S-150)
ME8	TK 441-025	Methanol/Water	Group 1	Pre-73/05	12,000	2.94	Scrubber S-102
ME111	TK 443-139	Methanol/cat.	Group 1	Pre-1973	10,000	2.5	Scrubber S-102
ME132	TK 441-028	Methanol/prod	Group 1	Pre-1973	12,000	2.94	Scrubber S-102
BD1	TK 422-199	Methanol	Group 1	2005	13,500	2.94	Scrubber CDST-BD 393-023
BD2	TK 441-369	Methanol	Group 1	2005	30,500	2.94	Scrubber CDST-BD 393-023
BD3	TK 443-017	Catalyst in Methanol	Group 1	2005	12,000	2.52	Scrubber CDST-BD 393-023
BD4	TK 421-052	Methanol/Water	Group 1	1987/2005	5,500	7.82	Scrubber CDST-BD 393-023
H1	TK 443-382	Xylene	Group 2	1997	30,500	0.8	None
H2	TK 441-450	Xylene	Group 2	1997	30,500	0.8	None
EPN-D	TK 441-451	Xylene	Group 2	1997	30,500	0.8	None
EPN-A	TK 441-394	o-Xylene	Group 2	1979	1,698,000	0.16	Yes
EPN-B	TK 441-365	o-Xylene	Group 2	1977	1,055,000	0.16	Yes
AL-510	TK 422-012	Ethylene Oxide	Group 1	Pre-1973	12,000	21.20	Scrubber[d]
AL-511	TK 422-014	Ethylene Oxide	Group 1	Pre-1973	23,500	21.20	Scrubber[d]
AL-512	TK 422-013	Propylene Oxide	Group 1	Pre-1973	12,000	11.90	Scrubber[d]
AL-513	TK 422-015	Propylene Oxide	Group 1	Pre-1973	23,500	11.90	Scrubber[d]

Tank I.D. No.	Tank Equip. No.	Material	MACT Group 1 or Group 2	Year Built /Modified	Nominal Volume (Gal)	Vapor Pressure (psia)[a]	Control Equipment[b]
ST-1	TK 424-006	Monochloracteic Acid	Group 2	2006	18,000	0.15	Scrubber[e]
BD5	TK 441-368	Glycerin / Methanol	Group 1	2006	27,500	1.0	Scrubber CDST-BD 393-023
BD6	TK 443-229	Glycerin / Methanol	Group 1	2006	30,500	1.0	Scrubber CDST-BD 393-023
ME102	TK 441-275	Methanol/Ester	Group 1	Pre-1973	26,200	3.8	Scrubber S-105
ME103	TK 441-303	Methanol/Ester	Group 1	Pre-1973	30,500	3.8	Scrubber S-105
ME104	TK 441-304	Methanol/Ester	Group 1	Pre-1973	30,500	3.8	Scrubber S-105
ME105	TK 441-426	Methanol/Ester	Group 1	1989	30,500	3.8	Scrubber S-105
ME109	TK 441-427	Methanol/glyc	Group 1	1989	30,500	7.8	Scrubber S-105
ME113	TK 445-067	Methanol/glyc	Group 1	1989	30,500	7.8	Scrubber S-105
SME328	TK 441-452	Methanol	Group 1	1995	30,500	2.94	Scrubber S-339
AM859	TK 441-003	Methanol	Group 1	Pre-1973	13,500	2.94	Scrubber S-859
AM860	TK 445-008	Methanol	Group 1	1982	12,100	2.94	Scrubber S-859
AM864	TK 441-031	Methanol	Group 1	Pre-1973	12,100	2.94	Scrubber S-859

[a] At maximum storage temperature or 70°F if stored at ambient temperature.

[b] In addition, all of the tanks except the PA1 tank have a passive submerged loading pipe.

[e] Scrubber CDN-ST1 uses an alkaline water solution and only operates during loading

[d] These tanks are pressurized horizontal cylinders that are filled using a vapor balance system. High pressure in the tank car is vented through the storage tanks to a scrubber (not the same scrubber as for the methanol tanks). This occurs for only a few minutes at the end of each filling of the tank.

ATTACHMENT 6 <u>Applicability Equations</u>

Applicability Equations for Batch Operations (35 IAC 218.500(e))

1. The applicability equations in this subsection are specific to volatility.

2. For purposes of this subsection, the following abbreviations apply:

   A. FR = Vent stream flow rate, scfm;

   B. UTAME = Uncontrolled total annual mass emissions of VOM, expressed as lb/yr;

   C. WAV = Weighted average volatility;

   D. $MVOM_i$ = Mass of VOM component i;

   E. $MWVOM_i$= Molecular weight of VOM component i; and

   F. VP_i = Vapor pressure of VOM component i.

3. Weighted average volatility shall be calculated as follows:

$$\{(MWVOM_i)\}\ WAV = \frac{\sum_{i=1}^{n} \{(VP_i) \times (MVOM_i)\}}{\sum_{i-1}^{n} \{(MVOM_i)\}\ \{(MWVOM_i)\}}$$

4. For purposes of determining applicability, flow rate values shall be calculated as follows:

   A. Low WAV has a vapor pressure less than or equal to 75 mmHg at 20°C (68°F), and shall use the following equation:

   FR = [0.07 (UTAME)] - 1,821

   B. Moderate WAV has a vapor pressure greater than 75 mmHg but less than or equal to 150 mmHg at 20°C (68°F), and shall use the following equation:

   FR = [0.031 (UTAME)] – 494

   C. High WAV has a vapor pressure greater than 150 mmHg at 20°C (68°F), and shall use the following equation:

   FR = [0.013 (UTAME)] - 301

5. To determine the vapor pressure of VOM, the applicable methods and procedures in Section 218.111 of this Part shall apply.

35 IAC 218.502 Determination of Uncontrolled Total Annual Mass Emissions and Average Flow Rate Values for Batch Operations

a. Uncontrolled total annual mass emissions shall be determined by the following methods:

   i. Direct process vent emissions measurements taken prior to any release to the atmosphere, following any recovery device and prior to any control device, provided such measurements conform with the requirements of measuring the mass flow rate of VOM incoming to the control device as set forth in Section 218.503(f)(2), (f)(3)(A) and (f)(3)(B) of this Subpart; or

   ii. Engineering estimates of the uncontrolled VOM emissions from a process vent or process vents, in the aggregate, within a batch process train, using either the potential or permitted number of batch cycles per year or total production as represented in the source's operating permit as follows:

      A. Engineering estimates of the uncontrolled VOM emissions shall be based upon accepted chemical engineering principles, measurable process parameters, or physical or chemical laws and their properties. Examples of methods include, but are not limited to, the following:

         1. Use of material balances based on process stoichiometry to estimate maximum VOM concentrations;

         2. Estimation of maximum flow rate based on physical equipment design such as pump or blower capacities; and

         3. Estimation of VOM concentrations based on saturation conditions.

      B. All data, assumptions and procedures used in any engineering estimate shall be documented.

b. Average flow rate shall be determined by any of the following methods:

   i. Direct process vent flow rate measurements taken prior to any release to the atmosphere, following any recovery device and prior to any control device, provided such measurements conform with the requirements of measuring incoming volumetric flow rate set forth in Section 218.503(e)(2) of this Subpart;

ii. Average flow rate for a single unit operation having multiple emission events or batch process trains shall be the weighted average flow rate, calculated as follows:

$$WAF = \frac{\sum_{i=1}^{n} \{AFR_i \times ADE_i\}}{\sum_{i=1}^{n} (ADE_i)}$$

Where:

WAF = Actual weighted average flow rate for a single unit operation or batch process train;

AFR_i = Average flow rate per emission event;

ADE_i = Annual duration of emission event; and

n = Number of emission events.

For purposes of this formula, 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 vapor space when the single unit operation 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, according to Section 218.503(f)(2) of this Subpart, then such event is not an emission event for purposes of this Section.

iii. Engineering estimates calculated in accordance with the requirements in subsection (a)(2) of this Section.

c. For purposes of determining the average flow rate for steam vacuuming systems, the steam flow shall be included in the average flow rate calculation.