217/782-2113

TITLE V - CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT
and
TITLE I PERMIT[1]

PERMITTEE

Stepan Company
Attn: D. J. Muno
22500 West Millsdale Road
Elwood, Illinois 60421

Application No.: 96030061 I.D. No.: 197800AAE
Applicant=s Designation: Date Received: March 3, 1996
Operation of: Specialty Chemical Manufacturing Plant
Date Issued: September 29, 2000 Expiration Date[2]: September 29, 2005
Source Location: 22500 West Millsdale Road, Elwood, Will County
Responsible Official: Dwain Dodson, 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.

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

DES:DGP:jar

cc: Illinois EPA, FOS, Region 1
USEPA

[1] This permit may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the Clean Air Act and regulations promulgated thereunder, including 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within the permit.

[2] Except as provided in condition 8.7 of this permit.

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1.0 SOURCE IDENTIFICATION

1.1 Source

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

I.D. No.: 197800AAE
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
815/774-5204

1.4 General 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. In addition, the source operates boilers to supply steam for the manufacturing processes.

2.0 LIST OF ABBREVIATIONS/ACRONYMS USED IN THIS PERMIT

ACMA	Alternative Compliance Market Account
Act	Environmental Protection Act [415 ILCS 5/1 et seq.]
AFR	Average Flow Rate
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
ATUs	Allotment Trading Units
BAT	Best Available Technology
Btu	British thermal unit
°C	Degrees Celsius
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CFR	Code of Federal Regulations
CO	Carbon Monoxide
ERMS	Emission Reduction Market System
ERP	Early Reduction Program
°F	Degrees Fahrenheit
FR	Flow Rate
ft^3	cubic feet
gal	Gallon
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
hr	hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
Illinois EPA	Illinois Environmental Protection Agency
kg	kilogram
kW	kilowatts
LAER	Lowest Achievable Emission Rate
lb	pound
LDAR	Leak Detection and Repair
MACT	Maximum Available Control Technology
mmBtu	Million British thermal units
mmHg	millimeters of Mercury
mo	month
MON	Miscellaneous Organic NESHAP
MW	Megawatt
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PA	Phthalic Anhydride
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods

ppm	parts per million
ppmv	parts per million by volume
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
RMP	Risk Management Plan
scf	standard cubic feet
scfh	standard cubic feet per hour
scfm	standard cubic feet per minute
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SO_2	Sulfur Dioxide
SO_3	Sulfur Trioxide
SSM	Startup, Shutdown and Malfunction (Plan)
T1	Title I - identifies Title I conditions that have been carried over from an existing construction 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 construction permit and subsequently revised in this permit
TOC	Total Organic Compounds
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
yr	year

3.0 INSIGNIFICANT ACTIVITIES

3.1 Identification of Insignificant Activities

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

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

Tanks (44) containing HAPs and TANKS2 program determined emissions under 0.1 lb/hr pursuant to 201.211(a)(2):

422-102, 441-365, 441-394, 443-060, 443-061, 445-039, 445-040, 445-053, 445-054, 441-011, 441-091, 441-259, 441-452, 442-004, 441-003, 443-020, 443,320, 443-321, 448-004, 441-031, 441-039, 441-040, 441-046, 441-050, 441-112, 445-008, 441-016, 441-022, 441-025, 441-028, 443-139, 422-199, 443-271, 422-012, 422-013, 422-014, 422-015, 443-172, 422-272, 422-203, 441-407, 443-262, 445-066, Waste

Tanks (15) not containing HAPs and TANKS2 program determined emissions under 1.0 lb/hr pursuant to 201.211(a)(1):

434-040, 434-041, 443-166, 443-202, 443-308, 443-309, 443-310, 443-311, 443-008, 443-156, 443-164, 444-076, 444-078, 444-079, 441-453

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:

Five Continuous Neutralizers, Nos. 959-037, 31R-904, 622-012, 431-071 and M-11.

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

One Batch Sulfonator, No. 434-010, and one Batch Reactor, No. 084-285

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

The following storage tanks numbers (176):

441-106, 422-191, 422-192, 441-014, 441-088, 441-293, 441-298, 441-324, 441-334, 442-005, 443-006, 443-007, 441-041, 441-052, 441-061, 443-105, 443-189, 443-190, 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, 441-290, 441-292, 441-328, 441-395, 441-396, 441-397, 441-398, 441-399, 441-400, 443-218, 443-295, 445-031, 445-002, 422-173, 422-174, 422-175, 422-176, 422-177, 422-178, 422-179, 422-180, 422-181, 422-184, 422-190, 441-315, 441-316, 443-117, 443-250, 443-251, 443-253, 443-273, 443-275, 445-017, 445-027, 445-028, 445-029, 445-035, 445-036, 422-198, 441-026, 443-272, 422-188, 441-278, 441-318, 441-319, 441-344, 441-454, 442-018, 442-019, 443-157, 441-085, 441-138, 441-260, 441-333, 443-337, 422-202, 441-339, 441-340, 441-348, 441-349, 441-369, 443-200, 443-210, 443-220, 443-252, 441-078, 441-079, 441-080, 441-415, 443-181, 443-197, 421-051, 441-044, 441-102, 441-104, 441-105, 441-111, 442-016, 443-037, 443-109, 443-249, 443-254, 443-269, 443-270, 443-386, 445-057, 445-058, 421-073, 421-074, 421-075, 441-045, 444-077, 444-081, 441-357, 441-360, 441-368, 443-203, 443-377, 445-051, 445-056, 445-059, 443-286, 443-287, 443-288, 433-289, 444-083, 444-085, 441-416, 441-417, 441-422, 443-296, 443-299, 441-432, 441-433, 441-434, 441-438, 443-344, 443-345, 443-346, 443-347, 445-060, 445-061, 443-352, 391-040, 441-086, 441-373, 441-403, 445-034, 443-222, 443-229.

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).

3.2 Compliance with Applicable Requirements

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

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

3.2.2 For each particulate matter process emission unit, the Permittee shall comply with the applicable particulate

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

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

3.3 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
422-217 422-227 422-228 422-283 421-030 & 031 421-066 & 067	Four Parallel Converters (Reactors) Four 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	1981	Baghouse
EUTOX	Toximul Reactor (431-072) and Two Blend Tanks (431-055 and 431-087)	Pre 1972	None
EUAM	Amides Process Blend Tank (421-027) Toximul Amides Reactor (431-061) Amide Reactors (2K, 434-011 and 7K, 431-074)	1973 1973 1973 1978	None None Condenser and Sub-Cooler on Each 2K and 7K Line Vent Condenser on the Vacuum Pump

Emission Unit	Description	Date Constructed	Emission Control Equipment
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	
	C1 (431-008)	1973	
	C2 (431-007)	1973	
	C3 (431-006)	1973	
	C4 (431-031)	1973	
	C5 (431-032)	1973	
	C6 (431-052)	1973	
	C7 (443-207)	1973	
	C8 (421-096)	1990	
	C9 (431-009)	1973	
	C10 (434-019)	1973	
	C11 (434-032)	Pre-1972	
	E1 (443-159)	1975	
	E2 (443-162)	1975	
	E3 (443-161)	1975	
	E4 (421-094)	1990	
	E5 (421-097)	1990	
	E6 (443-160)	1975	
	E7 (443-068)	1986	
	F16K (431-084)	Pre-1972	
	F18K (421-098)	Pre-1972	
	H6K (431-070)	Pre-1972	
	H8K (433-001)	Pre-1972	
EUE	Esterification Processes A-4 Reactor (422-156)	1973	None
	Esters Fractionator (401-004)	1973	None
	MPR Reactor (431-095)	1989	None
EUH	Hydrotropes Process		
	Kettle AE@ 434-045	1989	None
	Kettle AA@ 434-043	1979	None

	Kettle AD@ 434-033 Kettle AB@ 434-034	1979 1986	None None

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUF	Foams Reactors (10)		
	Kit Reactors		
	V-1A (431-089)	1988	None
	V-1 (431-064)	1973	None
	Reactor		
	V-25 (443-253)	1987	None
	Three Reactors		
	V-10 (431-062)	1973	None
	V-13 (431-065)	1973	None
	V-14 (431-066)	1973	None
	Four Reactors		
	V-11 (431-063)	1973	None
	Bag-Dump Station		Baghouse
	V-12 (431-082)	1984	None
	V-19 (431-067)	1973	None
	V-24 (443-251)	1987	
	IPA Still (411-105) and Material Recovery Condenser (411-111)	1973	None
EUQU	Benzyl Quat Process		
	Reactor (433-002) Filter and Precoat Tank	1989	None
EUPT	Prill Tower for Quat Process (665-004)	1987	Scrubber (393-013) for Both VOM and PM
EUAL	Alkoxylation Process		
	R-1 Reactor (431-073)	Pre-1973	None
	R-2 Reactor (431-011)	Pre-1973	None
	R-3 Reactor (431-097)	1992	Scrubbers (391-069) and (391-070) in Series
EUFS	Fabric Softener Process		
	R-4 Reactor (421-104)	1992	Scrubbers (391-069) and

			(391-070) in Series
EUAS	Ashland Stripper (421-052)	1987	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUHR	Heptane Recovery Numerous Vessels and Condensers but Only Two Vents	1987	None
EUDG	Degassing Process Two Degassers (421-098) and (434-031)	 1990 1991	Venturi Scrubber (393-018) and KOH Packed Scrubber (391-058) for SO_2, SO_3
EUOM	Onamer M Process Numerous Vessels and Condensers but Only Vent is through Scrubber	1993	Wet Scrubber (205-506)
EUDF	Drum Filling		None
EULAL	LAL Process LAL Reactor (434-044)	 1988	 Wet Scrubber (391-056)
EUD	Drying Processes Two Drum Dryers (652-003 and 652-005) Material Handling Spray Dryer (655-003) Which Feed Two Cyclones (672-026 and 674-021) for Product Recovery	 1973 1984 1984	 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
EUS	Sulfonation Units E (431-057) F (431-080) G (431-069) H (431-088) I (431-081)	 1974 1982 1985 1988 1987	 Packed Tower Scrubber (Dry) or KOH Scrubber and Demister on H and I Units

	J (431-096)	1991	Demisters on All Units

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUE	Esterification Unit Methanol Column (402-014) IPA Column (401-008) and Glycerine Stripper (401-009)	1973 1989 1997	None None None
EUH	Hydrotropes Unit Wash Columns #1 and #2 (403-001 and 002) and Xylene Recovery Kettles (421-108 and 434-003)	1986 1990 1990 1984	None None
EUSME	Sulfonated Methyl Esters SME Reactors R1 (411-279) and R2 (411-412)	1989 1996	Vented to EUN Process
EUP	Polyol Unit Three Reactors 421-064, 065 and 066 Vented Through condensers to Phthalic Anhydride Catalytic Reactor (Afterburner) Azeotrope Column 402-023 DEG Column 402-020	1987 1988 1987	PA Catalytic Reactor (Afterburner) (435-003 to 005) None None
EUIB-1	Gas-Fired Boiler #1	Before 1980	None
EUIB-2	Gas-Fired Boiler #2 Backup Fuel: Oil	Before 1980	None
EUIB-3	Gas-Fired Boiler #3	Before 1980	None
EUIB-4	Gas-Fired Boiler #4 Backup Fuel: Oil	Before 1980	None
EUIB-5	Gas-Fired Boiler #5	Before 1980	None
EUV-E1	Vaporizer E1	1973	None
EUV-E2	Vaporizer E2	1989	None
EUV-PA1	Vaporizer PA1	1989	None
EUV-PA2, 3, and 4	Vaporizers Backup for PA1	1977	None
EUAH	Air Heater	Pre-1973	None
EUNG	Nitrogen Generator	1976	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
EULS	Lime Silo (445-050)	1987	Loading: Filter (674-022) Unloading: Cyclone (674-025)
WWTP	Wastewater Treatment Plant including Equalization Basin, Aeration Tanks, Clarifier and Sludge Tanks		None
CT	Cooling Towers (6)		None
UNL	SO_3 Unloading System		ECE Absorber and Demister
TK 445-038	Phthalic Anhydride (PA) Tank	1977	None
TK 441-015	Methanol Tank	Pre-1973	SLP[a]
TK 441-027	Methanol Tank	Pre-1973	SLP
TK 441-281	Methanol Tank	Pre-1973	SLP
TK 441-458	Methanol Tank	1997	SLP
TK 441-421	Methanol Water	1989	SLP
TK 441-298	Methanol Water	1989	SLP
TK 443-382	Xylene Tank	1997	SLP
TK 441-450	Xylene Tank	1997	SLP
TK 441-451	Xylene Tank	1997	SLP
TK 441-394	O-Xylene	1979	SLP
TK 441-365	O-Xylene	1977	SLP

[a] SLP is Submerged Loading Pipe

5.0 OVERALL SOURCE CONDITIONS

5.1 Source Description

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 Applicable Regulations

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

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

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

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

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 70EF into the atmosphere from any pump

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

e. Many processes listed in the unit-specific conditions in Section 7 are subject to 35 IAC 212.321(a). It is written in detail here and reference made to it in Section 7, where appropriate. This rule states that: No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified below and in 35 IAC 212.321 [35 IAC 212.321(a)].

The emissions of particulate matter into the atmosphere in any one hour period from each of the affected process units shall not exceed the allowable emission rates specified in the following equation:

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

Where:

P = Process weight rate in metric or English tons per hour; and

E = Allowable emission rates in kilograms or pounds per hour.

and

A = 2.54

^{B} = 0.534

f. No person shall 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]

g. Except as otherwise provided in this permit, compliance with Condition 5.2.2(e) and (f) above is determined from each emission unit unless several units are vented to the same control equipment.

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

a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.

b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

c. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

5.2.4 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)

5.2.5 a. Should this stationary source become subject to a regulation under 40 CFR Parts 60, 61, or 63, or 35 IAC after the date issued of this permit, then the owner or operator shall, in accordance with the applicable regulation(s), comply with the applicable requirements by the date(s) specified and shall certify compliance with the applicable requirements of such regulation(s) as part of the annual compliance certification, as required by 40 CFR Part 70 or 71.

b. No later than upon the submittal for renewal of this permit, the owner or operator shall submit, as part of an application, the necessary information to address either the non-applicability of, or demonstrate compliance with all applicable requirements of any potentially applicable regulation which was promulgated after the date issued of this permit.

5.2.6 Risk Management Plan

a. This stationary source, as defined in 40 CFR Section 68.3, is subject to 40 CFR Part 68, the Accidental Release Prevention regulations [40 CFR 68.215(a)(1)].

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

5.2.7 Episode Action Plan

a. If the source is required to have an episode action plan pursuant to 35 IAC 244.142, the Permittee shall maintain at the source and have on file with the Illinois EPA a written episode action plan (plan) for reducing the levels of emissions during yellow alerts, red alerts, and emergencies, consistent with safe operating procedures. The plan shall contain the information specified in 35 IAC 244.144.

b. The Permittee shall immediately implement the appropriate steps described in this plan should an air pollution alert or emergency be declared.

c. If a change occurs at the source which requires a revision of the plan (e.g., operational change, change in the source contact person), a copy of the revised plan shall be submitted to the Illinois EPA for review within 30 days of the change. Such plans shall be further revised if disapproved by the Illinois EPA.

d. For sources required to have a plan pursuant to 35 IAC 244.142, a copy of the original plan and any subsequent revisions shall be sent to:

i. Illinois EPA, Compliance Section; and

ii. For sources located in Cook County and outside of the city of Chicago: Cook County Department of Environmental Control; or

iii. For sources located within the city of Chicago: Chicago Department of Environmental Control.

5.3 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.

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

5.4 Source-Wide Operational and Production Limits and Work Practices

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

All new products manufactured in equipment included in the permit shall undergo an environmental review such as the Permittee=s AExperimental 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.

5.5 Source-Wide Emission Limitations

5.5.1 Permitted Emissions for Fees

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

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

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Volatile Organic Material (VOM)	624
Sulfur Dioxide (SO_2)	527
Particulate Matter (PM)	102
Nitrogen Oxides (NO_x)	140
HAP, not included in VOM or PM	1
TOTAL	1,394

5.5.2 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.

5.5.3 Other Source-Wide 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.

Other source-wide emission limitations are not set for this source pursuant to either the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, Illinois EPA rules for Major Stationary Sources Construction and Modification, 35 IAC Part 203, or Section 502(b)(10) of the CAA. However, there may be unit specific emission limitations set forth in Section 7 of this permit pursuant to these rules.

5.6 General Recordkeeping Requirements

5.6.1 Emission Records

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

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

5.6.2 Retention and Availability of Records

a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.

b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a source inspection.

5.7 General Reporting Requirements

5.7.1 General Source-Wide Reporting Requirements

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

5.7.2 Annual Emissions Report

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

5.7.3 Annual Reporting of HAP Emissions

The Permittee shall submit an annual report to the Illinois EPA, Compliance Section, on HAP emissions from significant emission units at the source consistent with the requirements of 35 IAC 254.130.

5.8 General Operational Flexibility/Anticipated Operating Scenarios

N/A

5.9 General Compliance Procedures

5.9.1 General Procedures for Calculating VOM and HAP Emissions

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

a. For the purpose of estimating VOM emissions from the storage tanks, the mathematical computations used in the current version of TANKS 3 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 is also acceptable.

5.10 Special Permit Shield

N/A

6.0 EMISSION REDUCTION MARKET SYSTEM (ERMS)

6.1 Description of ERMS

The ERMS is a Acap 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 further reasonable progress toward attainment, as required by Section 182(c) of the Clean Air Act.

The ERMS addresses VOM emissions during a seasonal allotment period from May 1 through September 30. Participating sources must hold Aallotment trading units@ (ATUs) for their actual seasonal VOM emissions. Each year participating sources are issued ATUs based on allotments set during issuance of the sources: CAAPP permit. These allotments are established from historical VOM emissions or Abaseline emissions@ lowered to provide the emission reduction from stationary sources required for 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 account to cover its actual VOM emissions during the preceding season. An 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 account database. The Illinois EPA will then retire ATUs in sources: accounts in amounts equivalent to their seasonal emissions. When a source does not appear to have sufficient ATUs in its 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 emission reductions from an Emission Reduction Generator or an Intersector Transaction (35 IAC 205.500 and 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 (35 IAC 205.710). Sources may also transfer or sell the ATUs that they holds to other sources or participants (35 IAC 205.630).

6.2 Applicability

This source is considered a Aparticipating source@ for purposes of the ERMS, 35 IAC Part 205.

6.3 Obligation to Hold Allotment Trading Units (ATUs)

a. Pursuant to 35 IAC 205.150(c)(1) and 205.720, and as further addressed by Condition 6.8, as of December 31 of each year, this source shall hold ATUs in its account in an amount not less than 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 Aemissions excursion compensation,@ as described in Condition 6.4.

   i. VOM emissions from insignificant 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 elsewhere in 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 Section 6.7(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 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.

6.4 Market Transaction

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.

6.5 Emission Excursion Compensation

Pursuant to 35 IAC 205.720, if the source fails to hold ATUs in accordance with Condition 6.3, 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 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 emission 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 of 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.

6.6 Quantification of Seasonal VOM Emissions

a. The methods and procedures included in the ERMS baseline determinations submitted with the CAAPP application shall be used for determining seasonal VOM emissions for purposes of the ERMS, with the following exceptions [35 IAC 205.315(b)]:

The ERMS emission baseline for the 2K and the 7K reactors within EUAM was determined before an aftercondenser (an emission reduction) was installed under Construction Permit 98010061. Because of this, the methodology presented on pp 483a - 483d of the CAAPP application will be used in lieu of the emission factors used in the ERMS baseline determination.

For nonregulated components that are monitored under a voluntary LDAR program, the leak rate correlation on pp 2-21 and 2-29 of EPA document EPA-453/R-93-026 shall be used.

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 condition report within two days of the time when such excess emissions occurred due to the emergency; and

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

6.7 Annual Account Reporting

a. For each year in which the source is operational, the Permittee shall submit, as a component of its Annual Emission Report, seasonal VOM emission 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 Section 205.337 of this Subpart;

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 are 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.

6.8 Allotment of ATUs to the Source

a. i. The allotment of ATUs to this source is 922 ATUs per seasonal allotment period.

ii. This allotment of ATUs reflects the Illinois EPA's determination that the source's baseline emissions were 104.499 tons.

iii. The source's allotment reflects 88% of the baseline emissions (12% reduction) except for the VOM emissions from specific emission unit excluded from such reduction, pursuant to 35 IAC 205.405 including units complying with MACT or using BAT, as identified in Condition 6.11 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 during issuance and, if not retired in this season, the next seasonal allotment period.

v. Condition 6.3(a) becomes effective beginning in the seasonal allotment period during the initial issuance of ATUs by the Illinois EPA into the Transaction Account for the source.

b. Contingent Allotments for New or Modified Emission Units

The source was issued a construction permit prior to January 1, 1998 for the following new or modified emission units for which three years of operational data is not yet available:

Emission Unit	Construction Permit #	Date Issued	Maximum Available Allotment	Explanation of Maximum Allotment
EUPA (Phthalic Anhydride)	97010026	12/31/97	72.5	Five Times Monthly Maximum
EUP	96050090	06/06/96	1.3	Approximately 5/12 of Annual
EUSME	95060104	10/06/95	1.5	

In accordance with 35 IAC 205.310(h) and 205.320(f), the source shall submit a written request for, or an application for, a revised emissions baseline and allotment which address these emission units by December 1 of the year of the third complete seasonal allotment period in which each such newly constructed or modified emission unit is operational. Such submittal shall include information from the affected emission units on the seasonal emissions for these first three seasonal allotment periods.

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 emission 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.

6.9 Recordkeeping for ERMS

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

a. Seasonal component of the Annual Emission Report;

b. Information on actual VOM emissions, as specified in detail in Sections 5 and 7 of this permit and Condition 6.6(a); and

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

6.10 Federal Enforceability

Section 6 becomes federally enforceable upon approval of the ERMS by USEPA as part of Illinois' State Implementation Plan.

6.11 Exclusions from Further Reductions

a. VOM emissions from the following emission units, if satisfying subsection (a)(1), (a)(2), or (a)(3) prior to May 1, 1999, shall be excluded from the VOM emissions reductions requirements specified in IAC 205.400(c) and (e) as long as such emission units continue to satisfy subsection (a)(1), (a)(2), or (a)(3) [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 their ERMS application and the Illinois EPA has determined that the following emission units qualifies for exclusion from further reductions because they meet the criteria as indicated above [35 IAC 205.400(a) and (c)]:
The phthalic anhydride (EUPA) process is subject to a MACT standard but due to a construction permit a baseline has not been established. See Condition 6.8(b). After a baseline is established, further reductions will not be required.

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

b. VOM emissions from the emission units using BAT for controlling VOM emissions, prior to May 1, 1999, shall not

be subject to the VOM emissions reductions requirements specified in 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 their ERMS application and the Illinois EPA has determined that the following emission units qualify for not requiring further reductions because these emission units use BAT for controlling VOM emissions as indicated above [35 IAC 205.400(b) and (c)]:

None

7.0 UNIT SPECIFIC CONDITIONS

7.1 Unit: Air Oxidation Process (Phthalic Anhydride)
Control: Catalytic Reactor (Afterburner) and Filter

7.1.1 Description

The reaction phase (in vessels called converters) which produces phthalic anhydride (PA, a HAP) is an air oxidation process, that is the partial oxidation of an organic material (in this case o-xylene, a 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.

7.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
422-106, 422-217, 422-227, 422-228	Four Parallel Converters (Reactors)	Three Catalytic Reactors[a] (435-003 to 005)
421-030 & 031 421-067	Parallel[b] Pretreaters	
401-006	Pre-Distillation	None

	Column with Material Recovery Condenser (411-174)	

Emission Unit	Description	Emission Control Equipment
401-005	Main Distillation Column with Material Recovery Condenser (411-173)	None
431-019	Batch Residue Column with Material Recovery Condenser (411-139)	Secondary Vent to Pretreaters
656-003, 656-006, & 007	Three Flakers, Residue Drumming and T/C Loading	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.

7.1.3 Applicability Provisions and Applicable Regulations

a. An Aaffected 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. 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.

35 IAC 218.520(b) and (c) are not relevant to the Permittee=s process.

b. 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 793EC (1460EF) 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)

c. Compliance with Condition 7.1.3(a)(i) and (d) shall be deemed compliance with Condition 5.2.2(f), that is, control equipment that reduces VOM by 98% fulfills the requirement for an 85% reduction.

d. 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(e). 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 (e) 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.

e. 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.

f. 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. To the extent that the 40 CFR 63, Subpart H requirements differ from 35 IAC 218, Subpart Q

requirements, compliance with Subpart H shall be deemed compliance with Subpart Q.

g. The pre-distillation and main distillation column are subject to the rule for continuous distillation and reactor process emission units. The control requirement that the Permittee complies with 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. 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 the following provision in 35 IAC 218.500(e): which involves a calculation using applicability equations. These equations are shown in Attachment 2.

i. The three flakers are subject to 35 IAC 212.321(a). See Condition 5.2.2.

   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.

j. Malfunction and Breakdown Provisions

   In the event of a malfunction or breakdown of any of the catalytic reactors (afterburners), the Permittee is authorized to continue operation of the converters in violation of the applicable requirement of 35 IAC 218.301, 218.520 and 216.362, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

   i. If the malfunction occurs in only one or two of the three afterburners, the flow to the others shall be increased to maximum capability so as to minimize the amount of gases bypassing the afterburners. After twelve hours, if the malfunctioning afterburner is not operating, the

converter operating rate shall be reduced in a safe and orderly manner so that the functioning afterburners can achieve 98% VOM destruction efficiency.

If all three afterburners should malfunction, after twelve hours the converters shall be shut down in a safe and orderly manner so as to prevent damage to equipment.

ii. To minimize the likelihood of a malfunction, the Permittee shall maintain an adequate inventory of spare parts of critical components, and perform routine and preventative maintenance and inspections.

iii. The Permittee shall fulfill the applicable recordkeeping and reporting requirements of Conditions 7.1.9(b) and 7.1.10(a).

k. Startup and Shutdown Provisions

The Permittee is authorized to operate the affected converters in violation of the applicable limit of 35 IAC 218.520, 216.362, and 40 CFR 63.114(a) during startup and shutdown pursuant to 35 IAC 201.262, as the Permittee has affirmatively demonstrated that all reasonable efforts have been made to minimize startup and shutdown emissions, duration of individual starts, and frequency of startups and shutdowns. This authorization is subject to the following:

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

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

A. Implementation of established startup and shutdown procedures, including venting the vapor stream to the afterburners as soon as safety allows.
B. Minimizing the frequency of startups and shutdowns.

iii. The Permittee shall fulfill the applicable recordkeeping requirements of Condition 7.1.9(a).

l. 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.

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 not subject to the NSPS, as follows, because they were either constructed prior to the applicability dates listed or 40 CFR 63.110 states that units subject to both the NSPS and the NESHAP is only required to comply with the NESHAP.

Specific Rule	Process Type	Applicability Date
40 CFR 60, Subpart III	Air Oxidation Processes	October 21, 1983
40 CFR 60, Subpart NNN	SOCMI Distillation Operations	December 30, 1983
40 CFR 60, Subpart RRR	SOCMI Reactors	June 29, 1990

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.

7.1.5 Control Requirements and Operational and Production Limits and Work Practices

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

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

ii. The three afterburners (catalytic reactors) shall be operated to reduce VOM emissions from the four converters/pretreaters by 98% [T1].

The above limitations were established in Construction Permit 97010026 pursuant to 35 IAC Part 203 in order to achieve the emission limit in Condition 7.1.6(a).

b. 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 months total).

c. Notwithstanding 35 Ill. Adm. Code 218.107 seasonal shutdown of the oxidizer system between November and March is not allowed.

d. The minimum oxidizer 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). Operation of an oxidizer under 644°F shall be considered a malfunction (breakdown) and shall be addressed as described in Condition 7.1.3(j) and excursions below 644°F that last for more than 30 minutes shall be reported as required in Condition 7.1.10.

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

7.1.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected converters/pretreaters are subject to the following:

a. 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.

b. 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.

c. 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 new major source or major modification pursuant to 35 IAC Part 203.

There are source wide emission limitations in Condition 5.5 that include this unit.

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. The requirement to conduct an initial test of catalytic oxidizer No. 5 in Condition 3(b) of Construction Permit 96080101 has been waived as requested by Stepan (Condition 3(d)(vi) of the permit), as a test was performed on a nearly identical control unit.

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. 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.

e. 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)).

f. 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).

7.1.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected unit to demonstrate compliance with Conditions 5.5.1 and 7.1.3, 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 for Startup and Shutdown

The Permittee shall maintain the following records, pursuant to Section 39.5(7)(b) of the Act, for the affected PA converter subject to Condition 7.1.3(d), which at a minimum shall include:

i. The following information for each startup and shutdown of converters:

A. Date and duration of the startup and shutdown, i.e., start time and time normal operation achieved, i.e., stable operation at load;

B. If normal operation was not achieved within one hour, an explanation why startup and shutdown could not be achieved in that hour;

C. A detailed description of the startup and shutdown, including reason for operation and whether standard procedure was followed;

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

E. VOM and HAP emissions during the startup or shutdown.

f. Records for Malfunctions and Breakdowns of Afterburners

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of the converters subject to 216.362, 35 IAC 218.520, and 40 CFR 63.113(a)(2) during malfunctions and breakdown of the control features of the afterburners, which as a minimum, shall include:

i. Date and duration of malfunction or breakdown;

ii. A detailed explanation of the malfunction or breakdown;

iii. An explanation why the damaged feature(s) could not be immediately repaired or the converter removed from service without risk of injury to personnel or severe damage to equipment;

iv. The measures used to reduce the quantity of emissions and the duration of the event;

v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and

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

g. Leak monitoring test information, dates of repairs, and emission calculations.

h. VOM emissions (lb/mo).

i. HAP and CO emissions (lb/yr).

7.1.10 Reporting Requirements

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

a. Failure to shut down the converters after malfunction of the afterburners within the time period allowed by Condition 7.1.3(j).

b. Exceedance of the emission limitations of Condition 7.1.6(a), exceedance of the production limit of Condition 7.1.5(a), or failure to achieve 98% destruction by the afterburner when not using the malfunction provision of Condition 7.1.3(j).

c. Reports required by the NESHAP, 40 CFR 63.118.

d. Reporting of Malfunctions and Breakdowns for afterburners.

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of a PA converter subject to Condition 7.1.3(c) during malfunction or breakdown of the control features of the afterburner.

i. The Permittee shall prepare semi-annual reports summarizing all periods of excess emissions due to startups, shutdowns, malfunctions and breakdowns. The semi-annual report shall provide the excess emission data in tabular form including: the date of the incident and duration of the excess emission period, the probable cause of the incident, the estimated amount and nature of emissions, and the steps taken to minimize emissions during such periods. The report shall be prepared and submitted to the Illinois EPA within 30 days of the end of each 6 month period. All reports, notifications, etc., required by this permit section shall be sent to the Compliance Section and the Regional Office.

ii. 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 discovery of a deviation from the requirements of Condition 7.1.3(j) during a malfunction, or breakdown that results in a CERCLA release.

iii. Upon correction of the deviation, the Permittee shall give a written follow-up notice to the Illinois EPA=s, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the PA 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 PA converters was taken out of service.

iv. If deviation is not corrected within one working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA=s, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until the requirements of Section 7.1.3(j) are 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 PA converters will be taken out of service.

7.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.1.12 Compliance Procedures

a. 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)

b. PM Emissions

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

c. HAP Emissions

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

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

e. To the extent that the 40 CFR 63 Subpart H and 35 IAC 218 Subpart Q LDAR programs are duplicative, compliance with the more stringent standard is deemed compliance with both.

7.2 Unit Batch Processes
Control Mostly None - But See 7.2.2

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.

7.2.2 List of Emission Units and 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) and Two Blend Tanks (431-055 and 431-087)	Yes			None
EUN	Batch Neutralizers (32)				None for All
	M1 (443-034)	No	Yes		
	M2 (443-035)	No	Yes		
	M3 (431-044)	No	Yes		
	M4 (431-060)	No	Yes		
	M5 (431-086)	No	Yes		
	M6 (443-041)	No	Yes		
	M7 (431-090)	No	Yes		
	M8 (421-103)	Yes	Yes		
	M9 (421-095)	Yes	Yes		
	M10 (443-268)	No	Yes		
	C1 (431-008)	Yes	Yes		
	C2 (431-007)	Yes	Yes		
	C3 (431-006)	Yes	Yes		
	C4 (431-031)	Yes	Yes		
	C5 (431-032)	Yes	Yes		
	C6 (431-052)	Yes	Yes		
	C7 (443-207)	No	Yes		
	C8 (421-096)	Yes	Yes		
	C9 (431-009)	No	Yes		
	C10 (434-019)	No	Yes		
	C11 (434-032)	No	Yes		
	E1 (443-159)	No	Yes		
	E2 (443-162)	Yes	Yes		

	E3 (443-161)	No	Yes		
	E4 (421-094)	Yes	Yes		
	E5 (421-097)	Yes	Yes		
	E6 (443-160)	No	Yes		

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
	E7 (443-068)	No	Yes		
	F16K (432-084)	Yes	Yes		
	F18K (421-098) H6K (431-070) H8K (433-001)	Yes Yes Yes	Yes Yes Yes		
EUAM	Amides Process Blend Tank (421-027) Toximul Amides Reactor (431-061) Amide Reactors (2K, 434-011 and 7K, 431-074)	No Yes Yes	Yes Yes Yes		Line Vent Condenser on the Vacuum Pump.
EUE	Esterification Processes A-4 Reactor (422-156) Esters Fractionator (401-004) MPR Reactor (431-095) (See also continuous processes [Condition 7.3.3] for some of equipment within this process and Condition 5.1.2(c) for the API separator	Yes Yes Yes		Yes Yes Yes	None None None

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUH	Hydrotropes Process Same material is processed by four kettles in series (E, 434-045, A, 434-043; D, 434-033; and B 434-034). The wash and recovery steps after are in continuous process [Condition 7.3.2]	Yes		Yes	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 V-11 IPA Still (411-105)	No No No Yes Yes	Yes Yes Yes Yes	Yes	None None None None Baghouse[c] None
EUQU	Benzyl Quat Process Reactor				

	(433-002), Filter and Precoat Tank	Yes		Yes	None

Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EUPT	Prill Tower for Quat Process (665-004)	Yes[d]		Yes	Scrubber (393-013) for both VOM and PM
EUAL	Alkoxylation Process R-1 Reactor (431-073) R-2 Reactor (431-011) R-3 Reactor (431-097)	 No No No		 Yes Yes Yes	 None None Scrubbers (391-069)[e] and (391-070) in series
EUFS	Fabric Softener Process R-4 Reactor (421-104)	 No		 Yes	 Scrubbers (391-069) and (391-070) in series
EUAS	Ashland Stripper (421-052)	Yes		Yes	None
EUHR	Heptane Recovery Numerous Vessels and Condensers but only Two Vents	Yes		Yes	None
EUDG	Degassing Process Two Degassers (421-098 and (434-031)	No		Yes	Venturi Scrubber (393-018) and KOH Packed Scrubber (391-058) for SO_2, SO_3
EUOM	Onamer M Process Numerous Vessels and Condensers				

	but Only Vent is through Scrubber	Yes		Yes	Wet Scrubber (205-506)
EUDF	Drum Filling	No		Yes	None
Emission Unit	Description	Reflux or Recovery Condenser	De Minimis[a]	Exempt[b] FR/AFR	Emission Control Equipment
EULAL	LAL Process LAL Reactor (434-044)	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
EUP	Batch Kettles (431-020 and 421-031) Used Intermittently	Yes		Yes	Combines with Polyol Vent to Catalytic Reactors

[a] De minimis pursuant to 35 IAC 218.500(c)(1) for single unit for all units except the EUAM Amide reactors which use the less than 30,000 lb/yr uncontrolled annual mass emissions from any process train as allowed by 35 IAC 218.500(c)(2).

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

[d] Cyclone recovers product, not a condenser

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

7.2.3 Applicability Provisions and Applicable Regulations

a. An Aaffected batch process@ for the purpose of these unit-specific conditions is an organic chemical manufacturing process identified in Condition 7.2.2 and subject to 35 IAC 218 Subpart V, ABatch Operations@, ' 218.500 through 218.506.

b. Within ' 218.500(c) are two levels of operation defined as de minimis and exempted from the control requirements of Section 218.501. These de minimis levels are as follows:

i. 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

ii. 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.

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

iv. Condition 7.2.2 included a column identifying equipment that meets these exemption levels, or a third exemption level, described in 7.2.3(c).

c. If emissions exceed the levels in Condition 7.2.3(b), 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 2, 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.

d. No person shall 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]

e. Reactor 431-063 in the EUF process, the Prill Tower (665-004) in the EUPT process, the slurry tank with Venturi scrubber that feeds either neutralizer 421-095 or 421-103 and all equipment in the EUD drying process are subject to the PM emitting rule cited in Condition 5.2.2(e).

f. The affected degassing process (EUDG) is subject to 35 IAC 214.301 and 214.303 which limit emissions as follows:

Rule	Pollutant	Emission Limit
214.301	SO_2	2000 ppm
214.303	SO_3	0.1 lb/hr

g. The Alkoxylation Process (EUAL) is subject to the Polyether Polyol MACT rule, 40 CFR 63 Subparts PPP and H. 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.

i. For the control technology of the Alkoxylation Process (EUAL) , Permittee shall be in compliance with the applicable rule (40 CFR 63 Subpart PPP, Section 63.1425) by June 1, 2002.

ii. For the entire Alkoxylation Process (EUAL), Permittee shall be in compliance with 40 CFR 63 Subpart H for equipment leaks (LDAR) by December 1, 1999. 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.

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 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

7.2.5 Control Requirements

a. The condensers, subcoolers and the after condenser on Amide Reactors 2K and 7K shall be operated to reduce VOM emissions by 90% in order to comply with Condition 7.2.3(d).

b. The Venturi scrubber and KOH packed scrubber on the two degassers (EUDG) shall be operated so as to comply with Condition 7.2.3(g).

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

7.2.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected processes identified 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)	(Ton/Yr)	Construction Permit No.
Benzyl Quat Process (EUQU)	800	3.7	89040012
Fabric Softener Reactors (R3 & R4)	250	0.87	92020021
LAL Reactor (EULAL)	300	1.1	93090006

Process	VOM Emissions[a] (Lb/Mo)	(Ton/Yr)	Construction Permit No.
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
Hydrotropes, "E" Kettle, (EUH)	500	1.0	89050067
Neutralizers E4 and E5 (EUN)	1,100	6.4	90070080

[a] Some past construction permits have not included short term limits so reasonable numbers were generated [T1N].

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 new major source or major modification pursuant to 35 IAC Part 203.

b. Emissions from the affected slurry tank with Venturi scrubber feeding either neutralizer 421-095 or 421-103 shall not exceed the following limits [T1]:

PM_{10} Emissions

(Ton/Month)	(Ton/Year)
0.05	0.36

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 98080070, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

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).

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.

c. i. If the Illinois EPA requests an emissions test on the Amide reactor in order to demonstrate compliance with the de minimis exemption cited in Condition 7.2.3(b)(ii), the test shall use the determination

method described in 35 IAC 218.502(a)(1) which in turn cites Section 218.503(f). Emissions shall be measured prior to or after the vacuum pump but prior to the condenser located on the pump discharge. The condenser/subcooler located prior to the vacuum pump is not considered control equipment but part of the individual batch trains. Emissions shall be measured for on cycle of reactor 2K and one for 7K. The Permittee may choose to test the vent after the final condenser 59E-8032 in order to gather information that may later be useful when the MON rule is finalized. The product side exit temperature of the subcooler shall be recorded during the emissions test.

ii. If sampling is performed on the vacuum side, the sampling procedures shall be approved by the Illinois EPA in advance.

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.

d. The owner or operator of a batch operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements set forth in Section 218.501. Such method or procedures shall be approved by the Illinois EPA and USEPA as evidenced by federally enforceable permit conditions. As of the date of issuance of this permit, no alternate test method has been approved.

e. 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.

7.2.8 Inspection Requirements and 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:

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, this information is not required.

b. Although the Permittee is not employing a condenser to comply with 35 IAC 218.501, the condenser/subcooler prior to the vacuum pump is critical for determining compliance with the de minimis level for the EUAM Amides process. Therefore, the Permittee shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:

i. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius; 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. The owner or operator of a process vent shall be permitted to monitor by an alternative method or may monitor parameters other that 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.

7.2.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected batch operation to demonstrate compliance with Condition 5.5.1, pursuant to Section 39.5(7)(b) of the Act and 35 IAC 218.505:

a. Every owner or operator of a de minimis single unit operation or batch process train exempt under Section 218.500(c)(1) or (c)(2) shall keep records of the uncontrolled total annual mass emissions for any de minimis single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with Section 218.503, and the potential or permitted number of batch cycles

per year, or, in the alternative, total production as represented in the source's operating permit.

b. Every owner or operator of a single unit operation exempt under Section 218.500 (b) (3) or (d) shall keep the following records:

i. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculations, any measurements made in accordance with Section 218.503, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit.

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

c. Every owner or operator of a batch operation subject to the control requirements of 35 IAC 218.501 shall keep records of the following parameters: The average exit (product side) temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally.

d. Every owner or operator of a single unit operation claiming a vent stream concentration exemption level, as set forth in Section 218.500(d)(1), shall maintain records to indicate the vent stream concentration is less than or equal to 500 ppmv.

e. VOM and regulated HAP emissions from each process.

f. VOM emissions from specific equipment with emission limits in Condition 7.2.6(a). Since emission rates are low, estimates of emission may be made based on any reasonable assumptions, e.g., if emissions are kept for a group of five reactors, the emissions from one reactor may be assumed to be one-fifth of total.

7.2.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of a deviation of an affected batch operation from the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act and/or 35 IAC 218.505. Reports shall describe the probable cause of

such deviations, and any corrective actions or preventive measures taken:

a. The owner or operator of a de minimis single unit operation or batch process train exempt from the control requirements 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. A temperature of more than 9°F above the emissions test exit temperature on the product side of the process condenser/subcooler on the EUAM Amide process for a period of three days must be treated as a potential exceedance of the de minimis level. A recalculation of emissions must be done using temperature data for all days the temperature was more than 5°F above the emissions test temperature. Standard engineering calculations for the reduced efficiency of condenser/subcooler must be made and if the calculations demonstrate emissions within 5% of the de minimis emission level of 30,000 lb/yr for either batch process train, the Illinois EPA must be notified.

b. 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.

c. For the Alkoxylation Process (EUAL) subject to a MACT compliance date of June 1, 2002, the Permittee shall submit a notification of compliance status as required by 40 CFR 63.1439(e)(5) within 150 days of June 1, 2002. If a SSM Plan is required under 40 CFR 63.6(e)(3), the notification shall include a statement that an SSM Plan has been prepared.

   The SSM Plan at the site and any revision to that plant 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.

7.2.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to any processes described in Condition 7.2.2 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 5.4.

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 was determined before an aftercondenser (an emission reduction) was installed under Construction Permit 98010061. Because of this, the methodology presented on pp 483a - 483d of the CAAPP application will be used in lieu of the emission factors used in the ERMS baseline determination.

c. For the equipment identified specifically in Condition 7.2.6, 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.

7.3 Unit Synthetic Organic Chemical Continuous Distillation and Reactor Processes
Control Scrubbers and Demister (See Condition 7.3.2)

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.

7.3.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	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	Packed Tower Scrubber (Dry) or KOH Scrubber and Demister on H and I Units Demisters only on all other units
EUE	Esterification Unit (See also Batch Processes) Continuous Units Affected: Methanol Column (402-014), IPA Column (401-008) and Glycerine Stripper	None

	(401-009)	

Emission Unit	Description	Emission Control Equipment
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)	None
EUSME	Sulfonated Methyl Esters SME Reactors R1 (411-279) and R2 (411-412)	Vented to EUN Process (See Batch Processes, Section 7.2)
EUP	Polyol Unit Three Reactors 421-064, 065 and 066 Vented Through Condensers to Phthalic Anhydride Catalytic Reactor (Afterburner) DEG Column 402-020 Azeotrope Column 402-023	PA Catalytic Reactors (Afterburners) (see Section 7.1) None None

7.3.3 Applicability Provisions and Applicable Regulations

a. All Aaffected continuous distillation or reactor process@ for the purpose of these unit-specific conditions is a process identified in Condition 7.3.2.

b. 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). 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.

c. The sulfonation process is subject to the following rules:

i. No person shall 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. No person using sulfuric acid 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. Each sulfonator is subject to 35 IAC 212.321(a). See Condition 5.2.2(e)

e. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 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].

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 listed manufacture chemicals in Appendix A.

b. While the products manufactured in this equipment 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.

In addition, many of the processes were installed prior to the applicability dates and the liquids handled are heavy liquids.

c. While the products manufactured in this equipment 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.

7.3.5 Control Requirements

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.

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(a)(ii).

7.3.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected units are subject to the following:

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

	E M I S S I O N S					
	SO_2		SO_3		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

Operation	E M I S S I O N S SO_2 (Lb/Mo)	SO_2 (T/Yr)	SO_3 (Lb/Mo)	SO_3 (T/Yr)	VOM (Lb/Mo)	VOM (T/Yr)
"H/I" Unit when operated with Degassing[a]	1,000	4.9	400	1.05	2,200	13.27

[a] Hourly rates in the construction permit were converted to monthly to be consistent with other units [T1R].

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

EUSME Reactors	VOM Emissions (Lb/Mo)	VOM Emissions (Ton/Yr)
R1 (411-279)	300	1.5
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)	VOM and HAP Emissions (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)	VOM and HAP Emissions (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", 91060038 for "H/I", 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 new major source or major modification pursuant to 35 IAC Part 203.

7.3.7 Operating Requirements and Testing Requirements

a. 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.

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

7.3.8 Inspection Requirements and Monitoring Requirements

a. 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.

b. Pursuant to 35 IAC 218.434(d), monitoring of the process 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.

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

7.3.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected process identified in Condition 7.3.2 to demonstrate compliance with Conditions 5.5.1 and 7.3.3, 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.

7.3.10 Reporting Requirements

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

a. 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.

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

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

7.3.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to any of the operation 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.

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.

7.4 Unit Control — Storage Tanks (See Attachment 1) (See Attachment 1 which lists control for individual tanks in table format.)

7.4.1 Description

Approximately 300 storage tanks at the source met the criteria for insignificant emission units and were listed in Condition 3. These twelve storage tanks did 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).

7.4.2 List of Emission Units and Pollution Control Equipment

See Attachment 1.

7.4.3 Applicability Provisions and Applicable Regulations

a. An Aaffected tank@ for the purpose of these unit-specific conditions, is a storage tank listed in Attachment 1.

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 they are 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 they are only subject to the recordkeeping requirements, 40 CFR 60.116b. See Condition 7.4.9.

7.4.4 Non-Applicability of Regulations of Concern

a. This permit is issued based on the affected tanks PA1, ME1-3, and EPN-A & B not being subject to the New Source Performance Standards (NSPS) for storage tanks, 40 CFR 60, Subparts K, Ka, or Kb, because the affected tanks were constructed prior to applicability dates, do not meet the volume requirement to be subject, or the material stored does not meet the vapor pressure requirement to be subject, or a combination of the above.

b. 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.

c. 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.

d. 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 70EF. 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 70EF the vapor pressure is below 2.5 psia.

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

f. 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.

7.4.5 Control Requirements

None

7.4.6 Emission Limitations

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

N/A

7.4.7 Operating Requirements

None

7.4.8 Inspection Requirements

None

7.4.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected tank to demonstrate compliance with Conditions 5.5.1 and 7.4.3, pursuant to Section 39.5(7)(b) of the Act:

a. Maintain readily accessible records of the dimensions of the storage vessel and analysis of the capacity of the storage vessel [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 tank, as related to the repair or replacement of the loading pipe;

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

e. The throughput of the affected tank, gal/ERMS season and gal/yr; and

f. The annual VOM emissions from the 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 Reporting Requirements

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

a. Any storage of VOL in an affected tank listed in Condition 7.4.9(b) that is not in compliance with the requirements of Condition 7.4.9(b), e.g., no Apermanent submerged loading pipe,@ within five days of becoming aware of the non-compliance status. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps taken to avoid future non-compliance;

b. Any storage of VOL in an affected tank that is out of compliance with the requirements of Condition 7.4.9(b) due to damage, deterioration, or other condition of the loading pipe, within 30 days of becoming aware of the non-compliance status. This notification shall include a description of the event, the cause for the non-compliance, actions taken to correct the non-compliance, and the steps to be taken to avoid future non-compliance;

c. 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

d. 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.

7.4.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to the tanks 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

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.

7.5 Fuel Combustion Devices and Nitrogen Generator

7.5.1 Description

Five boilers are used to produce process steam at the source. Two of the boilers use residual fuel oil as a backup fuel.

The vaporizers use natural gas as a fuel to vaporize Dowtherm. The nitrogen generator burns natural gas and then removes water, carbon monoxide, and carbon dioxide to make a stream very high in nitrogen for process use. It is not classified as a fuel combustion device.

7.5.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Maximum Firing Rate (mmBtu/hr)	Control
EUIB-1	Gas-Fired Boiler #1	25	None
EUIB-2	Gas-Fired Boiler #2 Backup Fuel: Oil	25	None
EUIB-3	Gas Fired Boiler #3	53.5	None
EUIB-4	Gas-Fired Boiler #4 Backup Fuel: Oil	60	None
EUIB-5	Gas-Fired Boiler #5	72	None
EUV-E1	Vaporizer E1	14.4	None
EUV-E2	Vaporizer E2	14.4	None
EUV-PA1	Vaporizer PA1	34.8	None
EUV-PA2, 3, and 4	Vaporizers Backup for PA1	34.8	None
EUAH	Air Heater	6.0	None
EUNG	Nitrogen Generator	1.6	None

7.5.3 Applicable Regulations

a. An affected boiler, vaporizer, or air heater for the purpose of these units specific conditions is a fuel combustion unit that is fired with natural gas or residual oil as a backup fuel in Boilers 2 and 4, with a heat input capacity less than 100 mmBtu/hr. As of the Adate issued@ as shown on page 1 of this permit, the affected boiler is identified in Condition 7.5.2.

b. i. The emissions of particulate matter (PM) into the atmosphere in any one hour period shall not exceed 0.15 kg/MW-hr (0.10 lb/mmBtu) of actual heat input from any fuel combustion emission

unit using liquid fuel exclusively [35 IAC 212.206]. Thus this rule only applied to Boilers 2 and 4 when firing the backup fuel.

ii. The emission of sulfur dioxide (SO_2) into the atmosphere in any one hour period from any existing fuel exclusively shall not exceed 1.55 kg of sulfur dioxide per MW-hr of actual heat input when residual fuel oil is burned (1.0 lb/mmBtu) [35 IAC 214.161(a)]. Thus this rule only applied to Boilers 2 and 4 when firing the backup fuel.

iii. The emission of carbon monoxide (CO) into the atmosphere from any combustion emission unit with actual heat input greater than 2.9 MW (10 mmBtu/hr) to exceed 200 ppm, corrected to 50 percent excess air [35 IAC 216.121].

c. Each affected boiler, vaporizer, air heater, or nitrogen generator is subject to the opacity limits identified in Condition 5.2.2(b).

7.5.4 Non-Applicability of Regulations of Concern

a. The New Source Performance Standard for Small-Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc, applies to units constructed, reconstructed, or modified after June 9, 1989, with firing rates of 100 mmBtu/hr or less, but greater than 10 mmBtu/hr. All of the boilers were operating prior to the applicable date. Therefore, these rules do not apply.

b. 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).

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

d. Although fuel is combusted, a nitrogen generator is not classified as a fuel combustion device because the exhaust gases are the product. The combustion is under oxygen deficient conditions and thus more CO and less NO_x is produced than standard combustion

practice. Therefore the rule on CO concentration of 200 ppm [35 IAC 216.121] does not apply.

e. 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.

7.5.5 Operational and Production Limits and Work Practices

a. Each affected boiler, vaporizer, air heater, or nitrogen generator shall only be operated with natural gas except that residual fuel oil may be burned in Boilers #2 and #4.

b. The Permittee shall not use residual fuel oil (Grades No. 5 and 6 fuels) in the affected boilers with a sulfur content greater than the weight percent given by the formula:

Maximum Wt. Percent Sulfur = (0.00005) x (Gross Heating Value of Oil, Btu/Lb).

c. Nitrogen generated by the nitrogen generator shall not exceed 7,240 scfh.

7.5.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide limitations in Condition 5.5.1, the affected nitrogen generator is subject to the following:

Emissions of CO from the nitrogen generator shall not exceed 17.0 lb/hr and 74.5 tons/year [T1].

The above limitations were established in Construction Permit 95030041, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

7.5.7 Testing Requirements

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

None

7.5.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items to demonstrate compliance with Conditions 5.5.1 and 7.5.5 pursuant to Section 39.5(7)(b) of the Act:

a. Total natural gas usage for the affected boilers, vaporizers, air heater, or nitrogen generator (ft^3/year);

b. Total residual fuel oil usage for the affected boilers (gallons/year);

c. The maximum sulfur content (in wt. %) for each shipment of residual fuel oil used in the affected boilers; and

d. 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

The Permittee shall promptly notify the Illinois EPA, Compliance Section of a deviation from applicable requirements as follows pursuant to Section 39.5(7)(f)(ii) of the Act:

a. Notification within 60 days of operation of an affected boiler that may not have been in compliance with the opacity limitations in Condition 5.2.2(b), with a copy of such record for each incident;

b. If there is an exceedance of the sulfur content of the residual fuel oil limit specified in Condition 7.3.5, the Permittee shall submit a report within 30 days after receipt of a noncompliant shipment of residual fuel oil; and

c. Emissions of NO_x, PM, SO_2, or VOM from the affected boilers in excess of the limits specified in Condition 5.5.1 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

7.5.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.5.12 Compliance Procedures

a. Compliance with Conditions 7.5.3(b)(i) and (iii) is demonstrated under inherent operating conditions of an affected boiler, so that no compliance procedures are set in this permit addressing this requirements.

b. Compliance with Condition 7.5.3(b)(iii) is demonstrated under inherent operating conditions of affected boilers fired by residual oil with a sulfur content meeting the specification of Condition 7.5.5(b), so that no compliance procedures are set in this permit addressing this regulation.

c. Compliance with the emission limits in Conditions 5.5.1 and 5.5.3 shall be based on the recordkeeping requirements in Condition 7.5.9 and the emission factors and formulas listed below:

i. Emissions from the affected boilers burning natural gas shall be calculated based on the following emission factors:

Pollutant	Emission Factor ($lb/10^6\ ft^3$)
CO	84
PM	7.6
NO_x	100
SO_2	0.6
VOM	5.5

These are the emission factors for uncontrolled natural gas combustion in small industrial boilers (0.3 - < 100 mmBtu/hr), Tables 1.4-1 and 1.4-2, AP-42, Volume I, 5th Edition, March, 1998.
Boiler Emissions (lb) = Natural Gas Consumed Multiplied by the Appropriate Emission Factor.

ii. The same limits apply for the vaporizers as for boilers, but for the nitrogen generator the following emission factor shall be used:

	$lb/10^6\ ft^3$
CO	10,640
NO_x	17

iii. Emissions from the affected boilers burning residual fuel oil shall be calculated based on the following emission factors:

Pollutant	Emission Factor ($lb/10^3$ gallon)
PM	12.4
NO_x	67.0
SO_2	157S
VOM	0.76

These are the emission factors for uncontrolled residual fuel oil combustion in commercial/institutional/ residential combustors, Tables 1.3-1 and 1.3-2, AP-42, Volume I, Supplement F, October, 1996. AS@ indicates that the weight % of sulfur in the oil shall be multiplied by the value given.

Boiler Emissions (lb) = Distillate Fuel Oil Consumed (gallons) Multiplied by the Appropriate Emission factor.

iv. Emissions of CO from the nitrogen generator shall be calculated using 0.000743 lb CO per scf of nitrogen generated.

v. Total emissions for each pollutant are to be determined by combining the results of Conditions 7.5.12(c)(i) and (iii) for all affected boilers.

7.6 Unit Non-Manufacturing Operations
Control See Condition 7.5.2

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.

7.6.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
EULS	Lime Silo (445-050)	Loading: Filter (694-022) Unloading: Cyclone (674-025
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 Applicability Provisions and Applicable Regulations

a. An "affected lime silo" 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) identified in Condition 7.2.2. This silo emits only PM and is subject to the PM rule in Condition 5.2.2(e).

b. An "affected wastewater treatment plant" for the purpose of these unit specific conditions is an industrial wastewater treatment plant identified in Condition 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 Condition 7.6.2. The units which

compose the cooling tower are individually subject to Condition 5.2.

d. An Aaffected SO_3 unloading system@ for the purpose of these unit specific conditions is a system for unloading and storing SO_3 and identified in Condition 7.6.2. The system emits SO_2 and is subject to Condition 5.2.4.

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 NESHAP 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.

7.6.5 Control Requirements

The filter and cyclone on the lime silo shall be operated to meet compliance with Condition 5.2.2(e).

7.6.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, 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, pursuant to 40 CFR

52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

7.6.7 Operating Requirements and Testing Requirements

None

7.6.8 Inspection Requirements and Monitoring Requirements

None

7.6.9 Recordkeeping Requirements

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

a. Wastewater treatment throughput (gal/day).

7.6.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of a deviation of an affected wastewater treatment plant from 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:

The emissions increase such that the wastewater treatment plant becomes subject to the HON NESHAP.

7.6.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.6.12 Compliance Procedures

a. Wastewater Treatment Plant

VOM emissions determined by use of the Water 8 program by the USEPA.

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 August 13, 2999 (the date of issuance of the draft permit) unless this permit has been modified to reflect such new requirements.

8.2 Applicability of Title IV Requirements (Acid Deposition Control)

This source is not an affected source under Title IV of the CAA and is not subject to requirements pursuant to Title IV of the CAA.

8.3 Emissions Trading Programs

No permit revision shall be required for increases in emissions allowed under any USEPA approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for elsewhere in this permit and that are authorized by the applicable requirement [Section 39.5(7)(o)(vii) of the Act].

8.4 Operational Flexibility/Anticipated Operating Scenarios

8.4.1 Changes Specifically Addressed by Permit

Physical or operational changes specifically addressed by the Conditions of this permit that have been identified as not requiring Illinois EPA notification may be implemented without prior notice to the Illinois EPA.

8.4.2 Changes Requiring Prior Notification

The Permittee is authorized to make physical or operational changes that contravene express permit terms without applying for or obtaining an amendment to this

permit, provided that [Section 39.5(12)(a)(i) of the Act]:

a. The changes do not violate applicable requirements;

b. The changes do not contravene federally enforceable permit terms or conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements;

c. The changes do not constitute a modification under Title I of the CAA;

d. Emissions will not exceed the emissions allowed under this permit following implementation of the physical or operational change; and

e. The Permittee provides written notice to the Illinois EPA, Division of Air Pollution Control, Permit Section, at least 7 days before commencement of the change. This notice shall:

   i. Describe the physical or operational change;

   ii. Identify the schedule for implementing the physical or operational change;

   iii. Provide a statement of whether or not any New Source Performance Standard (NSPS) is applicable to the physical or operational change and the reason why the NSPS does or does not apply;

   iv. Provide emission calculations which demonstrate that the physical or operational change will not result in a modification; and

   v. Provide a certification that the physical or operational change will not result in emissions greater than authorized under the Conditions of this permit.

8.5 Testing Procedures

Tests conducted to measure composition of materials, efficiency of pollution control devices, emissions from process or control equipment, or other parameters shall be conducted using standard test methods. Documentation of the test date, conditions, methodologies, calculations, and test results shall be retained pursuant to the recordkeeping procedures of this permit. Reports of any tests conducted as required by this permit or as the result

of a request by the Illinois EPA shall be submitted as specified in Condition 8.6.

8.6 Reporting Requirements

8.6.1 Monitoring Reports

If monitoring is required by any applicable requirements or conditions of this permit, a report summarizing the required monitoring results, as specified in the conditions of this permit, shall be submitted to the Air Compliance Section of the Illinois EPA every six months as follows [Section 39.5(7)(f) of the Act]:

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 determination of emissions and operation which are intended to be made, including sampling and monitoring locations;

e. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods;

f. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification; and

g. Any proposed use of an alternative test method, with detailed justification.

8.6.3 Test Reports

Unless otherwise specified elsewhere in this permit, the results of any test required by this permit shall be submitted to the Illinois EPA within 60 days of completion of the testing. The test report shall include at a minimum [Section 39.5(7)(e)(i) of the Act]:

a. The name and identification of the affected unit(s);

b. The date and time of the sampling or measurements;

c. The date any analyses were performed;

d. The name of the company that performed the tests and/or analyses;

e. The test and analytical methodologies used;

f. The results of the tests including raw data, and/or analyses including sample calculations;

g. The operating conditions at the time of the sampling or measurements; and

h. The name of any relevant observers present including the testing company=s representatives, any Illinois EPA or USEPA representatives, and the representatives of the source.

8.6.4 Reporting Addresses

a. The following addresses should be utilized for the submittal of reports, notifications, and renewals:

i. Illinois EPA - Air Compliance Section

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (MC 40)

P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Illinois EPA - Air Regional Field Office

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

iii. Illinois EPA - Air Permit Section

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

iv. USEPA Region 5 - Air Branch

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

b. Unless otherwise specified in the particular provision of this permit, reports shall be sent to the Illinois EPA - Air Compliance Section with a copy sent to the Illinois EPA - Air Regional Field Office.

8.7 Obligation to Comply with Title I Requirements

Any term, condition, or requirement identified in this permit by T1, T1R, or T1N is established or revised pursuant to 35 IAC Part 203 or 40 CFR 52.21 (ATitle I provisions@) and incorporated into this permit pursuant to both Section 39.5 and Title I provisions. Notwithstanding the expiration date on the first page of this permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

9.0 Standard Permit Conditions

9.1 Effect of Permit

9.1.1 The issuance of this permit does not release the Permittee from compliance with State and Federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or applicable ordinances, except as specifically stated in this permit and as allowed by law and rule [Section 39.5(7)(j)(iv) of the Act].

9.1.2 In particular, this permit does not alter or affect the following:

a. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section;

b. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

c. The applicable requirements of the acid rain program consistent with Section 408(a) of the CAA; and

d. The ability of USEPA to obtain information from a source pursuant to Section 114 (inspections, monitoring, and entry) of the CAA.

9.1.3 Notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

9.2 General Obligations of Permittee

9.2.1 Duty to Comply

The Permittee must comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the CAA and the Act, and is grounds for any or all of the following: enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application [Section 39.5(7)(o)(i) of the Act].

The Permittee shall meet applicable requirements that become effective during the permit term in a timely manner

unless an alternate schedule for compliance with the applicable requirement is established.

9.2.2 Duty to Maintain Equipment

The Permittee shall maintain all equipment covered under this permit in such a manner that the performance or operation of such equipment shall not cause a violation of applicable requirements.

9.2.3 Duty to Cease Operation

No person shall cause, threaten or allow the continued operation of any emission unit during malfunction or breakdown of the emission unit or related air pollution control equipment if such operation would cause a violation of an applicable emission standard, regulatory requirement, ambient air quality standard or permit limitation unless such malfunction or breakdown is allowed by a permit condition [Section 39.5(6)(c) of the Act].

9.2.4 Disposal Operations

The source shall be operated in such a manner that the disposal of air contaminants collected by the equipment operations, or activities shall not cause a violation of the Act or regulations promulgated thereunder.

9.2.5 Duty to Pay Fees

The Permittee must pay fees to the Illinois EPA consistent with the fee schedule approved pursuant to Section 39.5(18) of the Act, and submit any information relevant thereto [Section 39.5(7)(o)(vi) of the Act]. The check should be payable to "Treasurer, State of Illinois" and sent to: Fiscal Services Section, Illinois Environmental Protection Agency, P.O. Box 19276, Springfield, Illinois 62794-9276.

9.3 Obligation to Allow Illinois EPA Surveillance

Upon presentation of proper credentials and other documents, the Permittee shall allow the Illinois EPA, or an authorized representative to perform the following [Section 39.5(7)(a) and (p)(ii) of the Act and 415 ILCS 5/4]:

a. Enter upon the Permittee's premises where an actual or potential emission unit is located; where any regulated equipment, operation, or activity is located or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect during hours of operation any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

d. Sample or monitor any substances or parameters at any location:

   i. At reasonable times, for the purposes of assuring permit compliance; or

   ii. As otherwise authorized by the CAA, or the Act.

e. Obtain and remove samples of any discharge or emission of pollutants authorized by this permit; and

f. Enter and utilize any photographic, recording, testing, monitoring, or other equipment for the purposes of preserving, testing, monitoring, or recording any activity, discharge or emission at the source authorized by this permit.

9.4 Obligation to Comply with Other Requirements

The issuance of this permit does not release the Permittee from applicable State and Federal laws and regulations, and applicable local ordinances addressing subjects other than air pollution control.

9.5 Liability

9.5.1 Title

This permit shall not be considered as in any manner affecting the title of the premises upon which the permitted source is located.

9.5.2 Liability of Permittee

This permit does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the sources.

9.5.3 Structural Stability

This permit does not take into consideration or attest to the structural stability of any unit or part of the source.

9.5.4 Illinois EPA Liability

This permit in no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the source.

9.5.5 Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege [Section 39.5(7)(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. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9.6.2 Records of Changes in Operation

A record shall be kept describing changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under this permit, and the emissions resulting from those changes [Section 39.5(12)(b)(iv) of the Act].

9.6.3 Retention of Records

a. Records of all monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit [Section 39.5(7)(e)(ii) of the Act].

b. Other records required by this permit shall be retained for a period of at least 5 years from the date of entry unless a longer period is specified by a particular permit provision.

9.7 Annual Emissions Report

The Permittee shall submit an annual emissions report to the Illinois EPA, Compliance Section no later than May 1 of the following year, as required by 35 IAC Part 254.

9.8 Requirements for Compliance Certification

Pursuant to Section 39.5(7)(p)(v) of the Act, the Permittee shall submit annual compliance certifications. The compliance

certifications shall be submitted no later than May 1 or more frequently as specified in the applicable requirements or by permit condition. The compliance certifications shall be submitted to the Air Compliance Section, Air Regional Field Office, and USEPA Region 5 **B** Air Branch. The addresses for the submittal of the compliance certifications are provided in Condition 8.6.4 of this permit.

a. The certification shall include the identification of each term or condition of this permit that is the basis of the certification; the compliance status; whether compliance was continuous or intermittent; the method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.

b. All compliance certifications shall be submitted to USEPA Region 5 in Chicago as well as to the Illinois EPA.

c. All compliance reports required to be submitted shall include a certification in accordance with Condition 9.9.

9.9 Certification

Any document (including reports) required to be submitted by this permit shall contain a certification by a responsible official of the Permittee that meets the requirements of Section 39.5(5) of the Act [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included as an attachment to this permit.

9.10 Defense to Enforcement Actions

9.10.1 Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit [Section 39.5(7)(o)(ii) of the Act].

9.10.2 Emergency Provision

a. An emergency shall be an affirmative defense to an action brought for noncompliance with the technology-based emission limitations under this permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:

i. An emergency occurred as provided in Section 39.5(7)(k) of the Act and the Permittee can identify the cause(s) of the emergency. Normally, an act of God such as lightning or flood is considered an emergency;

ii. The permitted source was at the time being properly operated;

iii. The Permittee submitted notice of the emergency to the Illinois EPA within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken; and

iv. During the period of the emergency the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission limitations, standards, or regulations in this permit.

b. This provision is in addition to any emergency or upset provision contained in any applicable requirement. This provision does not relieve a Permittee of any reporting obligations under existing federal or state laws or regulations.

9.11 Permanent Shutdown

This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shut down. This permit expires if all equipment is removed from the permitted location(s), notwithstanding the expiration date specified on this permit.

9.12 Reopening and Reissuing Permit for Cause

9.12.1 Permit Actions

This permit may be modified, reopened, and reissued, for cause pursuant to Section 39.5(15) of the Act. The filing of a request by the Permittee for a permit modification, revocation, and reissuance, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition [Section 39.5(7)(o)(iii) of the Act].

9.12.2 Reopening and Revision

This permit must be reopened and revised if any of the following occur [Section 39.5(15)(a) of the Act]:

a. Additional requirements become applicable to the equipment covered by this permit and three or more years remain before expiration of this permit;

b. Additional requirements become applicable to an affected source for acid deposition under the acid rain program;

c. The Illinois EPA or USEPA determines that this permit contains a material mistake or inaccurate statement when establishing the emission standards or limitations, or other terms or conditions of this permit; and

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

9.12.3 Inaccurate Application

The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation under Section 39.5(15)(b) of the Act.

9.12.4 Duty to Provide Information

The Permittee shall furnish to the Illinois EPA, within a reasonable time specified by the Illinois EPA any information that the Illinois EPA may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to the Illinois EPA copies of records required to be kept by this permit, or for information claimed to be confidential, the Permittee may furnish such records directly to USEPA along with a claim of confidentiality [Section 39.5(7)(o)(v) of the Act].

9.13 Severability Clause

The provisions of this permit are severable, and should any one or more be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected. The rights and

obligations of the Permittee shall be construed and enforced as if this permit did not contain the particular provisions held to be invalid and the applicable requirements underlying these provisions shall remain in force [Section 39.5(7)(i) of the Act].

9.14 Permit Expiration and Renewal

The right to operate terminates on the expiration date unless the Permittee has submitted a timely and complete renewal application. For a renewal to be timely it must be submitted no later than 9 and no sooner than 12 months prior to expiration. The equipment may continue to operate during the renewal period until final action is taken by the Illinois EPA, in accordance with the original permit conditions [Section 39.5(5)(l), (n), and (o) of the Act].

10.0 ATTACHMENTS

10.1 Attachment 1 - Storage Tanks

TABLE 1-1

Tank I.D. No.	Tank Equip. No.	Material	HAP	Year Built	Nominal Volume (Gal)	Vapor Pressure (psia)[a]	Submerged Loading Pipe
PA1	TK 445-038	Phthalic Anhydride (PA)	Yes	1977	29,000	0.37	No
ME1	TK 441-015	Methanol	Yes	Pre-1973	21,000	2.94	Yes
ME2	TK 441-027	Methanol	Yes	Pre-1973	12,000	8.5	Yes
ME3	TK 441-281	Methanol	Yes	Pre-1973	15,000	8.5	Yes
ME4	TK 441-458	Methanol	Yes	1997	20,000	2.94	Yes
ME5	TK 441-421	Methanol/Water	Yes	1989	30,500	0.9	Yes
ME6	TK 443-298	Methanol/Water	Yes	1989	30,500	0.9	Yes
H1	TK 443-382	Xylene	Yes	1997	30,500	0.8	Yes
H2	TK 441-450	Xylene	Yes	1997	30,500	0.8	Yes
EPN-D	TK 441-451	Xylene	Yes	1997	30,500	0.8	Yes
EPN-A	TK 441-394	o-Xylene	Yes	1979	1,698,000	0.16	Yes
EPN-B	TK 441-365	o-Xylene	Yes	1977	1,055,000	0.16	Yes

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

10.2 ATTACHMENT 2

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:

$$\{(MWVOM_i)\}\ WAV = \frac{\overset{n}{\underset{i=1}{3}} \{(VP_i) \times (MVOM_i)\}}{\overset{n}{\underset{i=1}{3}} \{(MVOM_i)\}\ \{(MWVOM_i)\}}$$

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 20EC (68EF), 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 20EC (68EF), and shall use the following equation:

$$FR = [0.031\ (UTAME)] - 494$$

   C. High WAV has a vapor pressure greater than 150 mmHg at 20EC (68EF), 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:

   1. 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

   2. 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:

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

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

         iii. 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:

1. 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;

2. 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.

3. 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.

10.3 Attachment 3 - 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: _____

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I. INTRODUCTION

This source has applied for a Clean Air Act Permit Program (CAAPP) operating permit for its existing operation. The CAAPP is the program established in Illinois for the operating permits for significant stationary sources required by the federal Clean Air Act, as amended in 1990. The conditions in a CAAPP permit are enforceable by both the Illinois Environmental Protection Agency (Illinois EPA) and the USEPA.

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. In addition, the source operates boilers to supply steam for the manufacturing processes.

II. EMISSION UNITS

Significant emission units at this source are as follows:

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
421-030 & 031 421-066 & 067	Four Parallel Pretreaters	1983 1990	(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	1981	Baghouse
EUTOX	Toximul Reactor (431-072) and Two Blend Tanks (431-055 and 431-087)	Pre 1972	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUAM	Amides Process Blend Tank (421-027)	1973	Condenser and Sub-Cooler on Each 2K and 7K Line
	Toximul Amides Reactor (431-061)	1973	
	Amide Reactors (K, 434-011 and 7K, 431-074)	1973 1978	Vent Condenser on the Vacuum Pump
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	
	C1 (431-008)	1973	
	C2 (431-007)	1973	
	C3 (431-006)	1973	
	C4 (431-031)	1973	
	C5 (431-032)	1973	
	C6 (431-052)	1973	
	C7 (443-207)	1973	
	C8 (421-096)	1990	
	C9 (431-009)	1973	
	C10 (434-019)	1973	
	C11 (434-032)	Pre-1972	
	E1 (443-159)	1975	
	E2 (443-162)	1975	
	E3 (443-161)	1975	
	E4 (421-094)	1990	
	E5 (421-097)	1990	
	E6 (443-160)	1975	
	E7 (443-068)	1986	
	F16K (431-084)	Pre-1972	
	F18K (421-098)	Pre-1972	
	H6K (431-070)	Pre-1972	
	H8K (433-001)	Pre-1972	

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUE	Esterification Processes A-4 Reactor (422-156)	1973	None
	Esters Fractionator (401-004)	1973	None
	MPR Reactor (431-095)	1989	None
EUH	Hydrotropes Process		
	Kettle AE@ 434-045	1989	None
	Kettle AA@ 434-043	1979	None
	Kettle AD@ 434-033	1979	None
	Kettle AB@ 434-034	1986	None
EUF	Foams Reactors (10)		
	Kit Reactors		
	V-1A (431-089)	1988	None
	V-1 (431-064)	1973	None
	Reactor		
	V-25 (443-253)	1987	Baghouse
	Three Reactors		
	V-10 (431-062)	1973	None
	V-13 (431-065)	1973	None
	V-14 (431-066)	1973	None
	Four Reactors		
	V-11 (431-063)	1973	None
	V-12 (431-082)	1984	None
	V-19 (431-067)	1973	None
	V-24 (443-251)	1987	None
	IPA Still (411-105) and Material Recovery Condenser (411-111)	1973	None
EUQU	Benzyl Quat Process		
	Reactor (433-002) Filter and Precoat Tank	1989	None
EUPT	Prill Tower for Quat Process (665-004)	1987	Scrubber (393-013) for

			Both VOM and PM

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUAL	Alkoxylation Process R-1 Reactor (431-073) R-2 Reactor (431-011) R-3 Reactor (431-097)	 Pre-1973 Pre-1973 1992	 None None Scrubbers (391-069) and (391-070) in Series
EUFS	Fabric Softener Process R-4 Reactor (421-104)	 1992	 Scrubbers (391-069) and (391-070) in Series
EUAS	Ashland Stripper (421-052)	1987	None
EUHR	Heptane Recovery Numerous Vessels and Condensers but Only Two Vents	1987	None
EUDG	Degassing Process Two Degassers (421-098) and (434-031)	 1990 1991	Venturi Scrubber (393-018) and KOH Packed Scrubber (391-058) for SO_2, SO_3
EUOM	Onamer M Process Numerous Vessels and Condensers but Only Vent is through Scrubber	1993	Wet Scrubber (205-506)
EUDF	Drum Filling		None
EULAL	LAL Process LAL Reactor (434-044)	 1988	 Wet Scrubber (391-056)

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUD	Drying Processes		
	Two Drum Dryers (652-003 and 652-005)	1973	Venturi Scrubber (391-057)
	Material Handling		Filter (674-016)
	Spray Dryer (655-003)	1984	Venturi Scrubber (393-012) and Demister (196-031) in Series
	Which Feed		
	Two Cyclones (672-026 and 674-021) for Product Recovery	1984	Baghouse (674-020) and Demister (196-031) in Series
EUS	Sulfonation Units		
	E (431-057) F (431-080) G (431-069) H (431-088) I (431-081) J (431-096)	1974 1982 1985 1988 1987 1991	Packed Tower Scrubber (Dry) or KOH Scrubber and Demister on H and I Units Demisters on All Units
EUE	Esterification Unit Methanol Column (402-014)	1973	None
	IPA Column (401-008) and Glycerine Stripper (401-009)	1989 1997	None None
EUH	Hydrotropes Unit Wash Columns #1 and #2 (403-001 and 002) and	1986 1990	None
	Xylene Recovery Kettles (421-108 and 434-003)	1990 1984	None
EUSME	Sulfonated Methyl Esters SME Reactors R1 (411-279) and	1989	Vented to EUN

	R2 (411-412)	1996	Process

Emission Unit	Description	Date Constructed	Emission Control Equipment
EUP	Polyol Unit Three Reactors 421-064, 065 and 066 Vented Through condensers to Phthalic Anhydride Catalytic Reactor (Afterburner)	1987	PA Catalytic Reactor (Afterburner) (435-003 to 005)
	Azeotrope Column 402-023	1988	None
	DEG Column 402-020	1987	None
EUIB-1	Gas-Fired Boiler #1	Before 1980	None
EUIB-2	Gas-Fired Boiler #2 Backup Fuel: Oil	Before 1980	None
EUIB-3	Gas-Fired Boiler #3	Before 1980	None
EUIB-4	Gas-Fired Boiler #4 Backup Fuel: Oil	Before 1980	None
EUIB-5	Gas-Fired Boiler #5	Before 1980	None
EUV-E1	Vaporizer E1	1973	None
EUV-E2	Vaporizer E2	1989	None
EUV-PA1	Vaporizer PA1	1989	None
EUV-PA2, 3, and 4	Vaporizers Backup for PA1	1977	None
EUAH	Air Heater	Pre-1973	None
EUNG	Nitrogen Generator	1976	None
EULS	Lime Silo (445-050)	1987	Loading: Filter (674-022) Unloading: Cyclone (674-025)
WWTP	Wastewater Treatment Plant including Equalization Basin, Clarifier and Sludge Tanks		None
CT	Cooling Towers (6)		None
UNL	SO_3 Unloading System		ECE Absorber and Demister
TK 445-038	Phthalic Anhydride (PA) Tank	1977	None

TK 441-015	Methanol Tank	Pre-1973	SLP[a]

Emission Unit	Description	Date Constructed	Emission Control Equipment
TK 441-027	Methanol Tank	Pre-1973	SLP
TK 441-281	Methanol Tank	Pre-1973	SLP
TK 441-458	Methanol Tank	1997	SLP
TK 441-421	Methanol Water	1989	SLP
TK 441-298	Methanol Water	1989	SLP
TK 443-382	Xylene Tank	1997	SLP
TK 441-450	Xylene Tank	1997	SLP
TK 441-451	Xylene Tank	1997	SLP
TK 441-394	O-Xylene	1979	SLP
TK 441-365	O-Xylene	1977	SLP

[a] SLP is Submerged Loading Pipe

III. EMISSIONS

This source is required to have a CAAPP permit since it is a major source of emissions.

For purposes of fees, the source is allowed the following emissions:

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Volatile Organic Material (VOM)	624
Sulfur Dioxide (SO_2)	527
Particulate Matter (PM)	102
Nitrogen Oxides (NO_x)	140
HAP, not included in VOM or PM	1
TOTAL	1,394

This permit is a combined Title I/CAAPP permit that may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the Clean Air Act and regulations promulgated thereunder, including 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within the permit by T1, T1R or T1N. The Source has requested that the Illinois EPA establish or revise such conditions in a Title I permit, consistent with the information provided in the CAAPP application. Any conditions established in a construction permit pursuant to Title I and not revised or deleted in this permit, remain in effect pursuant to Title I provisions until such time that the Illinois EPA revises or deletes them.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board=s emission standards. The Board's emission standards represent the basic requirements for sources in Illinois.

All emission sources in Illinois must comply with the federal New Source Performance Standards (NSPS). The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

All emission sources in Illinois must comply with the federal National Emission Standards for Hazardous Air Pollutants (NESHAP). The Illinois EPA is administering NESHAP in Illinois on behalf of the United States EPA under a delegation agreement.

V. PROPOSED PERMIT

CAAPP

A CAAPP permit contains all conditions that apply to a source and a listing of the applicable state and federal air pollution control regulations that are the origin of the conditions. The permit also contains emission limits and appropriate compliance procedures. The appropriate compliance procedures may include inspections, work practices, monitoring, record keeping, and reporting to show compliance with these requirements. The Permittee must carry out these procedures on an on-going basis.

Title I

A combined Title I/CAAPP permit contains terms and conditions established by the Illinois EPA pursuant to authority found in Title I provisions, e.g., 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Notwithstanding the expiration date on the first page of the permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

Because this source is located in the Chicago ozone nonattainment area and emits volatile organic material, the permit includes conditions to implement the Emission Reduction Market System (ERMS). The ERMS is a market-based program designed to reduce emissions from stationary sources to contribute to further reasonable progress toward attainment, as further described in section 6 of the permit. The permit contains the Illinois EPA=s determination of the source=s baseline emissions and

allotment of trading units under the ERMS, and identifies units not subject to further reductions. The permit also provides that the source must begin to operate under the ERMS following the initial issuance of trading units to the source. This will occur for the 2000 seasonal allotment period (rather than the 1999 season as originally intended by the ERMS) due in part to delays in the initial issuance of CAAPP Permits. These delays, which have occurred nationally, are attributable to a variety of causes including the unforeseen complexity of processing these permits and gaps in national guidance. Even though operation under the ERMS will not officially start until the 2000 seasonal allotment period, detailed recordkeeping and reporting of seasonal emissions was required beginning in 1998, which will document emission reductions achieved by sources in 1999 in preparation for the ERMS.

VI. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that this source's permit application meets the standards for issuance of a CAAPP permit. The Illinois EPA is therefore proposing to issue a CAAPP permit, subject to the conditions proposed in the draft permit.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 Ill. Adm. Code Part 164.

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