



FINAL DRAFT CAAPP PERMIT  
BP Amoco Chemical Company  
I.D. No.: 197800AAC  
Application No.: 96010025  
October 26, 1999

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1.0 SOURCE IDENTIFICATION

1.1 Source

BP Amoco Chemical Company - Joliet Plant  
23425 Amoco Road  
Channahon, Illinois 60410  
PHONE 815/467-3200

I.D. No.: 197800AAC  
Standard Industrial Classification: SIC, 2865

1.2 Owner/Parent Company

BP Amoco Chemical Company  
200 East Randolph Drive  
Chicago, Illinois 60601

1.3 Operator

BP Amoco Chemical Company - Joliet Plant  
Post Office Box 941  
Joliet, Illinois 60434

B. C. Darji  
815/467-3263

1.4 General Source Description

The BP Amoco Chemical Company is located at 23425 Amoco Road in Channahon Township, southwest of Joliet, Illinois. The source manufactures three major organic chemicals. In addition, the plant generates its heat using gas boilers and also has cooling towers, and a wastewater treatment plant.

2.0 LIST OF ABBREVIATIONS/ACRONYMS USED IN THIS PERMIT

Act	Environmental Protection Act [415 ILCS 5/1 et seq.]
ACMA	Alternative Compliance Market Account
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Other Sources (and Supplements A through F), USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711
ATU	Allotment Trading Unit
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
CMS	Continuous Monitoring System
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
ERMS	Emissions Reduction Market System
°F	degrees Fahrenheit
ft <sup>3</sup>	cubic feet
gal	gallon
gr	grains
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
IPA	Isophthalic Acid
°K	degrees Kelvin
kPa	Kilopascals
kW	kilowatts
LAER	Lowest Achievable Emission Rate
lb	pound
MACT	Maximum Achievable Control Technology
MAN	Maleic Anhydride
mmBtu	Million British thermal units
mmscf	millions of standard cubic feet
mo	month
NESHAP	National Environmental Standard for Hazardous Air Pollutants
NO <sub>x</sub>	Nitrogen Oxides

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NSPS	New Source Performance Standards
PIA	Purified Isophthalic Acid
PM	Particulate Matter
PM <sub>10</sub>	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
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
RMP	Risk Management Plan
scf	standard cubic feet
SO <sub>2</sub>	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
T1	Title I - identifies Title I conditions that have been carried over from an existing permit
T1N	Title I New - identifies Title I conditions that are being established in this permit
T1R	Title I Revised - identifies Title I conditions that have been carried over from an existing permit and subsequently revised in this permit
TMA	Trimellitic Anhydride
TOC	Total Organic Compounds
TRE	Total Resource Effectiveness
USEPA	United States Environmental Protection Agency
VOL	Volatile Organic Liquid
VOM	Volatile Organic Material
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, includes as follows:

- AN-3 Heating Oil Tanks/Drums
- AN-3 Heating Oil Storage Tank
- DF-204 Gasoline Storage Tank
- 0-Xylene Unloading (Tank Trucks)
- AN-3 Excelltherm Heating Oil Unloading
- MM-803 Trimellitic Acid Scrubber

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

- Waste Oil Tanks
- Blowdown Drum MD-1002
- Diesel Fuel Tanks
- Cobalt Acetate Tank (MF-1203)
- Manganese Acetate Tank (MF-1202)
- Initiator Metering Tanks (1F-185 and 1F-195)
- Catalyst Storage Tanks (HF-1403, HF-207 and HF-208)
- Salt Overflow Tank (NF-200)
- PIA Product Return Station
- Sulfuric Acid Storage Tank
- Solvent Parts Washer
- Welding Activities With/Without Vent Hoods
- Lime Mixing Tanks (CF-705, 712 and 714)
- Sulfuric Acid Tanks (CF-1501 and 1502, CF-408 and 412)
- Ammonium Hydroxide Tank (EF-115)
- Phosphoric Acid Storage Tank (EF-101)
- Alum Tanks (EF-400, EF-402)
- Polymer Dilution Tank (EF-403)
- Mixing Tank (EF-104)
- PIA Unit Degasifier
- Recycle Solvent (Water) Drum - LD-401
- Polymer Tank (EF-117)
- Ferrous Chloride Tank (EF-200)
- Hitech Salt Storage and Changeout

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PIA Hydrogen Storage  
Hydrobromic Acid Storage Tanks  
Used Oil Loading Activity  
Waste Treatment Sludge Loading/Unloading  
Flyash Bags Handling/Transportation  
Gasoline Unloading  
Diesel Fuel Unloading  
Butane Sphere  
Lime Handling Emissions  
Miscellaneous Chemicals Unloading Activities  
Waste Treatment Polishing Day Tanks with Filtration  
System  
CO<sub>2</sub> Stripper  
Sludge Feed Tanks  
Painting (Coating of Buildings, Equipment, Various  
Parts, Etc.)  
Superfund Landfill Organic Emissions  
Caustic Storage Tanks (MF-1501, MF-1502, HF-1401,  
HF-1402, EF-113 and EF-701)  
Betz Water Treatment Tanks (NF-8373, NF-4256, NF-910,  
and NF-9222)  
Propylene Glycol Storage Tank (ND-700)  
Propylene Glycol Hot Water Surge Tank (ND-1100)  
Lubricating Oil Reservoirs  
Triethyl Phosphate Storage Drum (ND-103)  
Caustic Drum (LD-602)  
Glycerin Sealant Reservoirs (LF-901, LF-902, HF-1001,  
MF-1301A, MF-1302A, and MF-1303A)  
Lube Oil System at N2/O2 Unit  
Gas Driven Compressors  
Lube Oil/Cutting Oil System  
Ethylene/Propylene Glycol Storage Tank (CF-1950)  
Betz Chemicals Storage Tanks (MF-1605, HF-908, and  
HF-905)  
Flocculent Tanks (EF-107, 108, 109 and 114)  
Sludge Tank (EF-110)

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

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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 218.302, 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
01	Reactors (NR-200A & B) Vented to Condensers (NE-300, 301A/B and 302 Vented to Scrubber (NT-400) to Control	1974	Catalytic Oxidizer, NB-400
02	O-Xylene Splitter Tower (NT-600) and Vent Header (ND-1500)	1974	ND-1500 Vent Scrubber
03	Brule Residue (Liquid Waste) Incinerator NB-800	1975	None
04	Product Loading Operations	1974	None
05	Reactor (HR-301) Vented to High Pressure Absorber (HT-307)	1997	Catalytic Oxidizer, HR-1306 Followed by Bromine Scrubber, HT-1307
06	Product Drying Section	1997	Low Pressure Absorber (PD-700)
07	Vent Header Dehydration and Light End Recovery Section and Associated Pieces of Equipment	1997	Atmospheric Absorber (HT-501)
08	Crystallization Process	1997	Third Crystallizer Condenser (HE-423)
09	Meta-Xylene Storage Tanks (CF-1608 and 1614)	1973	Internal Floating Roofs
10	Acetic Acid Storage Tank (HF-1404)		Overhead Condenser (HE-1404)
11	IPA Residue (Solid Waste) Incinerator (HB-2301)	1986	Baghouses (HM-2301A through F)
12	Product Day Tanks (KF-110 and KF-111)		Dust Collectors (KM-110(2) and KM-111(2))
13	Incinerator Bottoms Receiver (HF-2302)	1986	None
14	First Crystallizer (HD-421) with Overhead Condensers		Overhead Condenser (HE-411)

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Emission Unit	Description	Date Constructed	Emission Control Equipment
15	IPA Gas-Fired Hot Oil Furnace (HB-2200) with Firing Rate of 6.0 mmBtu/hr	1980	None
16	Feed Silo LF-111	1964	Dust Collector LM-112
17	Reactor (LR-101) and Crystallizers (LD-201, 202 and 203) and Feed Slurry Tank (LD-101)	1990	Vent Scrubber LM-305
18	Four Centrifuges (LB-311A, B, C, and D)	1996	Venturi Scrubber LM-313
19	Dryer (LM-312)	1996	Venturi Scrubber LM-314
20	Day Tanks (HF-1210 and 1211)	1964	Dust Collectors (HM-1210(2) and 1211(2))
21	Hot Oil Furnace (LB-501), Gas-Fired, 18.3 mmBtu/hr	1964	None
22	Reaction Section (Three Batch Reactors, MR-301, 302, 303) to High Pressure Absorber (MT-304) to Oxidizer	1967	Regenerative Thermal Oxidizer (MB-1050)
23	Feed Preparation Crystallizer (MD-403) and Crystallizer Filter to Low Pressure Absorber (MT-802) to Oxidizer	1967	Regenerative Thermal Oxidizer (MB-1050)
24	Dehydration/Distillation (MD-601, -602, -603, and -801)	1967	Fume Scrubber (MD-705)
25	Dehydration/Distillation (MD-602)		Barometric Condenser (MD-766A/B)
26	Flaker (MM-748)	1967	Dust Collector MM-749
27	Bagging	1967	Dust Collectors (MM-602/603)
28	TMA Residue Incinerator (MB-1002)	1967	Baghouse (MM-1010, 1011, 1012)
29	Psuedocumene Storage Tanks (CF-1609, 1612, 1613)	1970	None
30	Acetic Acid Storage Tank (MF-1101)	1967	None

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Emission Unit	Description	Date Constructed	Emission Control Equipment
31	Hot Oil Furnace (MB-1025), Gas-Fired, 45.8 mmBtu/hour	1997	None
32	Gas-Fired Boiler CB-703	Pre-1972	None
33	Gas-Fired Boiler CB-704	Pre-1972	None
34	Gas-Fired Boiler CB-706	1998	Low NO <sub>x</sub> Burners
35	Cooling Towers (CU-401, 402, 403)	Pre-1972	None
36	Three PIA Silos DF-100, DF-200, F-707	Pre-1973	Dust Collectors DM-112, DM-200, M-718
37	Three PIA Packaging Processes DF-100, DF-200, F-707	Pre-1973	Dust Collectors DM-100, DM-213, M-708
38	Four Terephthalic Acid (TA) Silos BF-406, 407, 410, F-706	1957	Dust Collectors BM-406, BM-407, BM-410, M-706
39	TA Packaging Operation (Bags or Bulk)	Pre-1973	Dust Collector BM-701
40	PIA Warehouse Vacuum System		Dust Collector DM-105
41	TMA Warehouse Vacuum System		Dust Collector MM-604A/B
42	The following low emission units open or vented to atmosphere: Storage Tank (MF-2001, Open) Aeration Basins, Clarifier, Groundwater Decanter System, Sludge Drying Pond	1964	None
43	Anaerobic Reactor (ER-701)	1991	Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Header
44	Biogas Dryer (EM-702A/B)		Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Heater
45	Wastewater Feed Tanks (EF-501/511)	1991	Internal Floating Roof
46	Sludge Dryer (EM-801)	1995	Scrubber (EE-801)
47	Sludge Dryer Conveyor	1995	Dust Collector (EM-802)

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<sub>x</sub> PM<sub>10</sub> 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.

Compliance with this requirement is considered to be assured by the inherent nature of operations at this source, as demonstrated by historical operation.

- 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 cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2,000 ppm [35 IAC 214.301].
- d. Several 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

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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

Compliance with this rule is determined for 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 The MAN Unit, IPA/PIA Units, Cooling Towers and Closed Anaerobic Biological Treatment System at this source are subject to the HON (Hazardous Organic NESHAP, 40 CFR 63 Subparts F, G and H) and the general provisions of 40 CFR 63 Subpart A.

5.3 Non-Applicability of Regulations of Concern

None

5.4 Source-Wide Operational and Production Limits and Work Practices

- a. 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:
- b. Unless otherwise stated in Section 7.0, compliance with any emission or production limit in Section 7.0 shall be determined from a running total of 12 months of data.

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)	674.1
Sulfur Dioxide (SO <sub>2</sub> )	27.1
Particulate Matter (PM)	193.3
Nitrogen Oxides (NO <sub>x</sub> )	1199.3
HAP, not included in VOM or PM	---
TOTAL	2093.8

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

- a. VOM emissions from the Cooling Towers and Groundwater Decanter System and any other emission units which are subject to 35 IAC 218 Subpart TT shall not exceed 24.9 tons/yr.
- b. 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 and 5.5.3(a), pursuant to Section 39.5(7)(b) of the Act:

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

- b. VOM Emissions from the Groundwater Decanter System and Cooling Towers and any other emission units subject to 35 IAC 218 Subpart TT and the annual potential to emit from each unit.

5.6.2 Control Equipment Maintenance Logs for Each Piece of Control Equipment.

- a. The Permittee shall maintain a log of all maintenance performed on the capture system, control device, monitoring equipment and the associated emission unit regulated or required under this permit.
- b. The Permittee shall keep a log of all times when the capture systems, control devices or monitoring equipment is not operating. This may be by exception, i.e. the equipment may be assumed to be operating if no log entry indicating it is not operating.

5.6.3 Records for Operating Scenarios

N/A

5.6.4 Retention and Availability of Records

- a. All records and logs required by this permit shall be retained for 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. Records of emission tests shall be kept indefinitely, or until superseded by a more recent test.
- c. The Permittee shall retrieve and print, on paper during normal source office hours, any records required by this permit and 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 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 deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from any testing, monitoring, or recordkeeping required or regulated under this permit.

5.7.2 Annual Emissions Report

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

5.7.3 Annual Reporting of HAP Emissions

The Permittee shall submit an annual report to the Illinois EPA, Compliance Section, on HAP emissions from the source.

5.8 General Operational Flexibility/Anticipated Operating Scenarios

N/A

5.9 General Compliance Procedures

5.9.1 General Procedures for Calculating fugitive leak 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 fugitive VOM emissions from leaking components at the source, the emission factors found in "1995 Protocol for Equipment Leak Emission Estimates" published by USEPA in November

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I.D. No.: 197800AAC  
Application No.: 96010025  
October 26, 1999

1995 by the Emission Standards Division of DAQPS,  
"EPA-453/R-95-017". Summaries of this lengthy  
document are also acceptable.

- b. 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.

## 6.0 EMISSIONS REDUCTION MARKET SYSTEM (ERMS)

### 6.1 Description of ERMS

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

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

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

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

Note: This narrative description of the ERMS is provided for informational purposes and is not intended to be enforceable as a legal matter. This also applies to process descriptions provided in Section 7. Refer to the ERMS, 35 IAC Part 205, and the provisions which follow for enforceable requirements of the ERMS.

## 6.2 Applicability

This source is considered a "participating 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 35 IAC 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 the ATU equivalent of its VOM emissions during the preceding seasonal allotment period (May 1 - September 30), not including VOM emissions from the following, or the source shall be subject to "emissions excursion compensation," as described in Condition 6.5.
  - i. VOM emissions from insignificant emission units and activities as identified in Section 3 of this permit, in accordance with 35 IAC 205.220;
  - ii. Excess VOM emissions associated with startup, malfunction, or breakdown of an emission unit as authorized in Section 7.0 of this permit, in accordance with 35 IAC 205.225;
  - iii. Excess VOM emissions to the extent allowed by a Variance, Consent Order, or Compliance Schedule, in accordance with 35 IAC 205.320(e)(3);
  - iv. Excess VOM emissions that are a consequence of an emergency as approved by the Illinois EPA, pursuant to 35 IAC 205.750; and
  - v. VOM emissions from certain new and modified emission units as addressed by Condition 6.8(b), if applicable, in accordance with 35 IAC 205.320(f).

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

#### 6.4 Market Transactions

- a. The source shall apply to the Illinois EPA for and obtain authorization for a Transaction Account prior to conducting any market transactions, as specified at 35 IAC 205.610(a).
- b. The Permittee shall promptly submit to the Illinois EPA any revisions to the information submitted for its Transaction Account, pursuant to 35 IAC 205.610(b).
- c. The source shall have at least one account officer designated for its Transaction Account, pursuant to 35 IAC 205.620(a).
- d. Any transfer of ATUs to or from the source from another source or general participant must be authorized by a qualified Account Officer designated by the source and approved by the Illinois EPA, in accordance with 35 IAC 205.620, and the transfer must be submitted to the Illinois EPA for entry into the Transaction Account database.

#### 6.5 Emissions 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 the notice, as follows:
  - i. The purchase of ATUs shall be in an amount equivalent to 1.2 times the emissions excursion; or

- ii. If the source had an emissions excursion for the seasonal allotment period immediately before the period for the present emissions excursion, the source shall purchase ATUs in an amount equivalent to 1.5 times the emissions excursion.
- b. If requested in accordance with paragraph (c) below or in the event that the ACMA balance is not adequate to cover the total emissions excursion amount, the Illinois EPA will deduct ATUs equivalent to the specified amount or any remaining portion thereof from the ATUs to be issued to the source for the next seasonal allotment period.
- c. Pursuant to 35 IAC 205.720(c), within 15 days after receipt of an Excursion Compensation Notice, the owner or operator may request that ATUs equivalent to the amount specified be deducted from the source's next seasonal allotment by the Illinois EPA, rather than purchased from the ACMA.

#### 6.6 Quantification of Seasonal VOM Emissions

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

No exceptions

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

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

6.7 Annual Account Reporting

- a. For each year in which the source is operational, the Permittee shall submit, as a component of its Annual Emissions Report, seasonal VOM emissions information to the Illinois EPA for the seasonal allotment period. This report shall include the following information [35 IAC 205.300]:
  - i. Actual seasonal emissions of VOM from the source;
  - ii. A description of the methods and practices used to determine VOM emissions, as required by this permit, including any supporting documentation and calculations;
  - iii. A detailed description of any monitoring methods that differ from the methods specified in this permit, as provided in 35 IAC 205.337;
  - iv. If a source has experienced an emergency, as provided in 35 IAC 205.750, the report shall reference the associated emergency conditions report that has been approved by the Illinois EPA;
  - v. If a source's baseline emissions have been adjusted due to a Variance, Consent Order, or CAAPP permit Compliance Schedule, as provided for in 35 IAC 205.320(e)(3), the report shall provide documentation quantifying the excess VOM emissions during the season that were allowed by the Variance, Consent Order, or Compliance Schedule, in accordance with 35 IAC 205.320(e)(3); and
  - vi. If a source is operating a new or modified emission unit for which three years of operational data is not yet available, as specified in 35 IAC 205.320(f), the report shall specify seasonal VOM emissions attributable to the new emission unit or the modification of the emission unit.

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

6.8 Allotment of ATUs to the Source

- a.
  - i. The allotment of ATUs to this source is 2,146 ATUs per seasonal allotment period.
  - ii. This allotment of ATUs reflects the Illinois EPA's determination that the source's baseline emissions were 221.64 tons per season.
    - A. This determination includes the use of 1994 and 1995 as baseline seasons.
    - B. This determination also includes adjustment to actual emissions to account for voluntary over-compliance at the source, e.g., tanks CF-1608 and 1609 have floating roofs that are now required, pursuant to 35 IAC 205.320(d), as further addressed in Section 7 of this permit.
  - iii. The source's allotment reflects 88% of the baseline emissions (12% reduction), except for the VOM emissions from specific emission units excluded from such reduction, pursuant to 35 IAC 205.405, including units complying with MACT or using BAT, as identified in Condition 6.11 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 following 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 following 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

Not Applicable

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- c. Notwithstanding the above, part or all of the above ATUs will not be issued to the source in circumstances as set forth in 35 IAC Part 205, including:
  - i. Transfer of ATUs by the source to another participant or the ACMA, in accordance with 35 IAC 205.630;
  - ii. Deduction of ATUs as a consequence of emissions excursion compensation, in accordance with 35 IAC 205.720; and
  - iii. Transfer of ATUs to the ACMA, as a consequence of shutdown of the source, in accordance with 35 IAC 205.410.

#### 6.9 Recordkeeping for ERMS

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

- a. Seasonal component of the Annual Emissions Report;
- b. Information on actual VOM emissions, as specified in detail in Sections 5 and 7 of this permit and Condition 6.6(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 shall be excluded from the VOM emissions reductions requirements specified in 35 IAC 205.400(c) and (e) as long as such emission units continue to satisfy the following [35 IAC 205.405(a)]:
  - i. Emission units that comply with any NESHAP or MACT standard promulgated pursuant to the CAA;

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- ii. Direct combustion emission units designed and used for comfort heating purposes, fuel combustion emission units, and internal combustion engines; and
- iii. An emission unit for which a LAER demonstration has been approved by the Illinois EPA on or after November 15, 1990.

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

Steam Boiler CB-703  
Steam Boiler CB-704  
Steam Boiler CB-705  
IPA Hot Oil Furnace HB-2200  
TMA Hot Oil Furnace MB-1001  
PIA Hot Oil Furnace LB-501  
Reboiler CE-1950  
IPA H.P. Absorber HD-304  
IPA Dehydration Tower TH-504  
IPA L.P. Absorber DD-700  
IPA Atm. Absorber HD-501  
IPA Drumming HF-504  
IPA Cryst. Ejector HG-407  
MAN Cat. Oxidizer NB-400  
MAN Vent Scrubber ND-1500  
MAN Loading Operation  
Waste Treatment  
Fugitive Emission (IPA/PIA)  
Fugitive Emission (MAN)  
M-Xylene Loading  
Fugitive Emission (Sewers)

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

The source has demonstrated in its ERMS application and the Illinois EPA has determined that the following emission units qualify for exclusion from further

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reductions because these emission units use BAT for  
controlling VOM emissions as indicated above [35 IAC  
205.405(b) and (c)]:

None

7.0 UNIT SPECIFIC CONDITIONS

7.1 Unit Maleic Anhydride Unit  
 Primary Control Catalytic Oxidizer NB-400

7.1.1 Description

Production of maleic anhydride is accomplished by the partial oxidation of butane over a catalyst. Processes after the initial reaction are for the purposes of product recovery and fractionation. There are condensers and a scrubber but these are for product recovery and not control equipment but proper operation minimizes the organic material that has to be destroyed by the catalytic oxidizer.

Since the reaction is performed in an oxygen deficient atmosphere, CO is produced in addition to VOM. The CO is converted to CO<sub>2</sub> by the catalytic oxidizer. The fractionator bottoms are incinerated in a liquid waste incinerator. Several pieces of equipment are vented to a wet scrubber that is control equipment. The product is a solid at room temperature, but is stored and shipped as a liquid at an elevated temperature.

7.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
01	Reactors (NR-200A & B) Vented to Condensers (NE-300 NE-301A/B and 302) vented to scrubber (NT-400) to oxidizer	Catalytic Oxidizer, NB-400
02	O-Xylene Splitter Tower (NT-600) and Vent Header <sup>a</sup> (ND-1500)	ND-1500 Vent Scrubber
03	Brule Residue (Liquid Waste) Incinerator (NB-800) with Natural Gas/Biogas as Supplemental Fuel	None
04	Product Loading Operations	None

<sup>a</sup> The following equipment is vented to the vent header:

MAN Unit Product Storage Tanks, NF-1602, 1603, 1604, 1605 and 1606

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MAN Day Tanks, NF-603A, 603B  
Crude MAN Tank, NF-300  
Orthoxylene Tank, NF-600  
Vacuum Pump Knockout Drum, ND-603  
Maleic Acid Dissolving Tank, NF-400  
Dehydration Tower Overhead Decanter, ND-500  
Xylene Surge Drum, ND-502  
Heavy End Forcut Tank, NF-601  
Incinerator Feed Tank, NF-602  
A Relief Valve Header also feeds to ND-1500

#### 7.1.3 Applicability Provisions and Applicable Regulations

- a. i. A. An "affected air oxidation process" for the purpose of these unit-specific conditions is a process which uses air or a combination of air and oxygen in combination with one or more organic reactants to produce one or more organic compounds. Only the equipment vented to the catalytic oxidizer (NB-400) and scrubber (ND-1500) are subject to the air oxidation rule. The solid waste incinerator and product loading are not subject to the air oxidation rule. (35 IAC 218.520)
  - 1. The thermal oxidizer is subject to 35 IAC 218.520(a) which requires a VOM reduction of at least 98% by weight; or VOM concentration less than 20 ppm by volume, dry basis.
  - 2. The process vent streams vented to the scrubber ND-1500 are exempt from the limitations of 218.520(a) provided that the TRE is greater than 6.0 pursuant to 35 IAC 218.520(c). The TRE shall be calculated as the more stringent of the TRE based upon a combination of the process vent streams or the TRE based on an individual process vent stream. The TRE shall be calculated based upon the equation and procedures in 35 IAC 218.520(c)(2)

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and the coefficients in Appendix D  
of 35 IAC 218.

B. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of NB-400 catalytic oxidizer, pursuant to 35 IAC 201.262, the Permittee is authorized to continue operation of the maleic anhydride reactor in excess of the applicable requirements of 35 IAC 218.520(a), 218.302 and Condition 7.1.5(b) of this permit, as necessary to prevent risk or injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

1. The Permittee shall repair the damaged feature(s) of the catalytic oxidizer or remove the reactor from operation within 12 hours unless the feature(s) can be repaired within 24 hours.

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

C. Startup Provisions

The Permittee is authorized to operate an affected incinerator in excess of the applicable limit of 35 IAC 218.181(d) and 212.123 during startup pursuant to 35 IAC 201.262, as the Permittee has affirmatively demonstrated that all reasonable efforts have been made to minimize startup emissions, duration of individual starts, and frequency of startups. This authorization is subject to the following:

1. This authorization only extends for a period of up to 1 minute following initial firing of fuel during each

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startup event. Startup typically occurs twice per week.

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

Implementation of established startup procedures, including pre-heating the combustion chamber.

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

- ii. No person shall cause or allow the emission of any gases containing CO into the atmosphere from any polybasic organic acid partial oxidation manufacturing process unless the total fuel value of the waste gas stream is less than 30 percent of that required for flame incineration of the waste gas stream at 793° C (1460° F) without heat exchange. Polybasic organic acid partial oxidation manufacturing processes not meeting the above conditions shall burn such waste gas stream in a direct flame afterburner to achieve a resulting concentration of carbon monoxide in such waste gas stream of less than or equal to 200 ppm or shall employ such other equivalent control method or equipment as may be approved by the Illinois EPA according to the provisions of 35 IAC 201. (35 IAC 216.362)
- iii. No person shall cause or allow the emission of more than 8 lb/hr of organic material into the atmosphere from any emission unit except as specified in 218.301, 218.302, 218.303 and 218.304. If no odor nuisance the limitations shall only apply to photochemically reactive material as defined in 35 IAC 211.4690. (35 IAC 218.301 and 218.302) Compliance with

Condition 7.1.3(a)(I)(A) shall be deemed compliance with this requirement.

- b. The maleic anhydride process is subject to 35 IAC 218 Subpart Q, Leaks from synthetic organic chemical manufacturing plants. See Attachment 1.
- c. The maleic anhydride process is subject to the applicable Hazardous Organic NESHAP (HON) rule 40 CFR 63 Subparts F, G and H and 40 CFR 63 Subpart A (general provisions, as applicable to MAN process).

The HON rule is very chemical specific, that is, for HAPs. Thus components that contain only the main raw material, butane, are not required to be leak tested for Subpart H because butane is not a HAP. The product, maleic anhydride, is a HAP and process vents, storage tanks, transfer operations wastewater and equipment leaks are affected. O-xylene is also a HAP.

Only the actual control provisions that the Permittee has chosen to comply with will be cited. For instance, the Permittee uses a catalytic afterburner (oxidizer) as the control device for the reactors so alternative control technologies such as flares will not be discussed.

- i. For the reactors vented to the catalytic oxidizers 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)]

Note: Compliance with Condition  
7.1.3(a)(I)(A) shall be deemed compliance with  
this requirement.

- ii. For the o-xylene splitter tower and vent header vented through the ND-1500 Ventura scrubber, 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.

- iii. Startup, Shutdown and Malfunction (SSM) Plan

The Permittee is required to have a written Startup, Shutdown and Malfunction (SSM) Plan for the equipment subject to the HON rule as described in Condition 7.1.3(a)(v)(A and B).

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.

- d. An "affected incinerator" is an incinerator which thermally destructs a liquid chemical waste generated on-site and identified in Condition 7.1.2.

- i. No person shall cause or allow the emission of PM into the atmosphere from any incinerator

burning less than 2000 lb/hr of refuse for which construction or modification commenced on or after April 14, 1972, to exceed 0.1 gr/scf of effluent gases corrected to 12 percent carbon dioxide. (35 IAC 212.181(d))

- ii. No person shall cause or allow the emission of CO into the atmosphere from any incinerator to exceed 500 ppm, corrected to 50 percent excess air. (35 IAC 216.141)
  
- e. i. An "affected product loading operation" is a system of piping and valves that transfer maleic anhydride from storage tanks to railcars or tank trucks, is identified in Condition 7.1.2, and subject to 35 IAC 218.122.
  - A. No person shall cause or allow the discharge of more than 8 lbs/hr of organic material into the atmosphere during the loading of any organic material from the aggregate loading pipes of any loading area having through-put of greater than 40,000 gal/day into any railroad tank car, tank truck or trailer unless such loading area is equipped with submerged loading pipes or a device that is equally effective in controlling emissions and is approved by the Illinois EPA according to the provisions of 35 IAC 201, and further processed consistent with Section 218.108. [35 IAC 218.122(a)]
  
  - B. No person shall cause or allow the loading of any organic material into any stationary tank having a storage capacity of greater than 250 gal, unless such tank is equipped with a permanent submerged loading pipe or an equivalent device approved by the Illinois EPA. [35 IAC 218.122(b)]
  
  - C. Exception: If no odor nuisance exists the limitations of 35 IAC 218.122 shall only apply to the loading of VOL with a vapor

pressure of 17.24 kPa (2.5 psia) or greater at 294.3EK (70EF). The product loaded has a vapor pressure lower than 2.5 psia even at its elevated storage and transfer temperature. [35 IAC 218.122(c)]

- ii. The product loading operation is subject to the HON rule, 40 CFR Subpart G. However, MAN product loading is classified as a Group 2 transfer rack and only recordkeeping provisions of 40 CFR 63.130(f) apply as per 63.126(c). See Condition 7.1.9(d)

#### 7.1.4 Non-Applicability of Regulations of Concern

N/A

#### 7.1.5 Control Requirements, Operational and Production Limits and Work Practices

- a. Construction permit 93080025 limits production of maleic anhydride to 110,000,000 lb/yr. [T1]
- b. Although 35 IAC 218.520 only requires a 98 wt. % reduction by the catalytic oxidizer (NB-400), a destruction efficiency of 98.5% of the inlet VOM is required as agreed to in construction permit 93080025. The minimum catalyst inlet temperature shall be 480EF and the minimum catalyst outlet temperature shall be 980EF under normal operating rates. [T1]
- c. The TRE of all process vent streams vented to ND-1500 vent scrubber (which uses water as the scrubbant) shall be at least 6.0, so as to comply with 35 IAC 218.520(a). The TRE requirements of 35 IAC 218.520 do not apply to MAN product storage vessels, surge vessels and bottoms receivers.
- d. Natural gas/biogas shall be the only supplemental fuel for the residue incinerator (NB-800).

#### 7.1.6 Emission Limitations

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

- a. VOM emissions from the catalytic oxidizer (NB-400) shall not exceed 55.4 lb/hr. Annual average VOM emission rate shall not exceed 43.5 lb/hr or 180.1 tons/year. [T1]

The above limitations were established in Construction Permit 93080025 pursuant to 35 IAC Part 203. These limits ensure that the construction/modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to 35 IAC Part 203. Compliance with annual limits shall be determined from a running total of 12 months of data.

7.1.7 Operating and Testing Requirements

- a. Upon written request by the Illinois EPA, the destruction efficiency of the catalytic oxidizer for both VOM and CO emissions from the catalytic oxidizer shall be measured by an independent testing service. The Illinois EPA may also request measurements necessary to make a TRE determination for process vent streams venting to the ND-1500 vent scrubber. All requested tests shall be done using appropriate USEPA Test Methods and the Illinois EPA given sufficient prior notice to be able to observe the emission tests.
- b. Emission tests for any HON requirement shall follow the applicable test methods and procedures and compliance procedures summarized as follows. This is in addition to any applicable testing requirements in 40 CFR 63.3 (as classified in Table 3 of Subpart F).

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

- c. i. The incinerator (NB-800) combustion chamber shall be preheated to the manufacturer's

recommended temperature but not lower than 1400 degrees °F, before any waste is sent to the incinerator, and this temperature shall be maintained during incineration.

- ii. The feed rate to the incinerator (NB-800) shall not exceed 1425 lbs/hr.
- iii. The type of waste fed to the incinerator shall be similar to the type of waste provided in the emissions test conducted on September 11 and 12, 1990. Only waste from the MAN manufacturing process shall be incinerated in the MAN incinerator.

7.1.8 Monitoring Requirements

- a. The catalytic oxidizer (NB-400) shall be equipped with pre- and post-catalyst temperature monitor and recorders so that the temperature rise across the catalyst may be calculated, or final VOM concentration measured pursuant to 218.105(d)(2).
- b. Monitoring for any applicable HON rule shall follow the applicable monitoring requirements summarized as follows. This is in addition to any applicable monitoring requirements in 40 CFR 63.8 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.114
Transfer Operation	63.127
Process Wastewater	63.143

- c. The ND-1500 scrubber shall be equipped with a flow meter for scrubbant (water).
- d. The residue incinerator feed tank (NF-602) shall be equipped with a device or utilize a method to measure the feedrate when the incinerator is operating. the residue incinerator (NB-800) shall be equipped with a temperature gauge to measure the combustion chamber temperature when the incinerator is operating.

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

#### 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 item indicated to demonstrate compliance with Conditions 5.5.1 and conditions 7.1.3 through 7.1.8, pursuant to Section 39.5(7)(b) of the Act:

- a. For the catalytic oxidizer (NB-400).
  - i. Pre- and post-catalyst temperature, °F continuously on computer.
  - ii. Time periods of operation during malfunction or breakdown.
- b. For the vent scrubber (ND-1500).
  - i. Log entry daily of flow meter reading for scrubbant (water).
  - ii. TRE calculations (for process vent streams vented to ND-1500).
- c. For residue incinerator (NB-800), when operating:
  - i. Feed rate, lb/hr.
  - ii. Combustion chamber temperature, °F, log entry twice each twelve hour shift or record continuously on computer.
  - iii. Startup periods when the emission limit of 35 IAC 212.181(d) and Condition 7.1.3(b)(i) is exceeded.
- d. For product loading operations.
  - i. Throughput.

- e. Recordkeeping for any HON requirement shall follow the applicable rule summarized below. This is in addition to any applicable general recordkeeping in 40 CFR 63.152, 63.103 and 63.10 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.117 and 63.118
Storage Vessels	63.123
Transfer Operation	63.128 and 63.130
Process Wastewater	63.147
Equipment Leaks	63.181

- f. Applicable records required for equipment leak detection and repair per 35 IAC 218.425 in Subpart Q.
- g. For the catalytic oxidizer (NB-400), vent scrubber (ND-1500), residue incinerator (NB-800), and Product Loading Operation.
  - i. VOM and HAP emissions including calculation methodology.

#### 7.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of an affected air oxidation process or waste incinerator deviating 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. Continued operation during malfunction or breakdown of the catalytic oxidizer (NB-400) beyond that allowed by Condition 7.1.3(a)(i)(B)(1) and HON startup, shutdown and malfunction provisions for HAP emissions.
- b. Operation of the process with catalytic oxidizer at not sufficient temperature to achieve 98.5% destruction efficiency and not defined as a malfunction or breakdown.

- c. Continued operation of the waste incinerator (NB-800) when the combustion chamber is below the temperature specified in 7.1.7(c)(i).
- d. Reporting for any applicable HON rule shall follow the applicable rule summarized as below. This is in addition to any applicable general reporting requirements in 40 CFR 63.152, 63.103 and 63.10 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.117 and 63.118
Storage Vessels	63.122
Transfer Operation	63.129 and 63.130
Process Wastewater	63.146 and 63.151
Equipment Leaks	63.182

- e. Applicable reporting as required by 35 IAC 218.425 Subpart Q.

7.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.1.12 Compliance Procedures

- a. Emissions from the catalytic oxidizer (NB-400) are assumed to be in compliance if the minimum daily average catalyst inlet and outlet temperatures meet the requirements of Condition 7.1.5(b).
- b. Emissions from the scrubber (ND-1500) are assumed to be in compliance if the scrubbant flow rate meets the requirements of Condition 7.1.5(c).
- c. Emissions from the waste incinerator (NB-800) are assumed to be in compliance if the waste feed rate and daily average combustion chamber temperature meet the requirements of Condition 7.1.7(c).
- d. Emissions shall be calculated based on material balance information and emissions rates determined from the most recent tests for control equipment. Emissions from tanks, equipment leaks and product loading are determined by AP-42 emission factors.

7.2 Unit Isophthalic Acid (IPA)  
 Primary Control: Catalytic Oxidizer

7.2.1 Description

IPA is produced by the catalytic air-oxidation of meta-xylene. After the initial reaction there are various solvent and product recovery operations, generally vented from absorbers. One absorber has a catalytic oxidizer on it. Since the oxidation is done in an oxygen deficient atmosphere CO is generated, but it is also oxidized by the catalytic oxidizer to carbon dioxide. This process also has a waste residue incinerator, which has a baghouse on it. A gas-fired hot oil furnace provides some of the process heat.

7.2.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
05	Reactor (HR-301) Section Vented to High Pressure Absorber (HT-307)	Catalytic Oxidizer, HR-1306 Followed by Bromine Scrubber, HT-1307
06	Product Drying Section	Low Pressure Absorber (PD-700)
07	Vent Header <sup>a</sup> , dehydration and Light End Recovery Section and Associated Pieces of Equipment	Atmospheric Absorber (HT-501)
08	Crystallization Process	Third Crystallizer Condenser (HE-423)
09	Meta-Xylene Storage Tanks (CF-1608 and 1614)	Internal Floating Roofs
10	Acetic Acid Storage Tank (HF-1404)	Overhead Condenser (HE-1404)
11	IPA Residue (Solids in Liquid Waste, i.e., Slurry) Incinerator (HB-2301) with Natural Gas/Biogas as Supplemental Fuel	Baghouses (HM-2301A through F)
12	Product Day Tanks (KF-110 and KF-111)	Dust Collectors (KM-111(2) and KM-110(2))

Emission Unit	Description	Emission Control Equipment
13	Incinerator Bottoms Receiver (HF-2302)	None
14	First Crystallizer (HD-421) with Overhead Condensers	Overhead Condensers (HE-411)
15	IPA Gas-Fired Hot Oil Furnace (HB-2301) with Firing Rate of 6.0 mmBtu/hr	None

<sup>a</sup> The following equipment is vented to the vent header:

- Feed Mix Drum HF-206
- Mother Liquor Drum HF-501
- Dehydration Solvent Drum HF-506
- Mother Liquor Storage Drums HD-521 and HD-522

### 7.2.3 Applicability Provisions and Applicable Regulations

- a. i. An "affected air oxidation process" for the purpose of these unit-specific conditions is a process in which air or a combination of air and oxygen in combination with one or more organic materials react to produce one or more organic compounds. Only the equipment listed in Condition 7.2.2 that is vented to the catalytic oxidizer, low or atmospheric absorbers, or crystallizer overhead condensers are subject to the air oxidation rule.
  - A. The catalytic oxidizer is subject to 35 IAC 218.520(a) which requires a VOM reduction of at least 98% by weight from any process vent stream; or VOM concentration less than 20 ppm by volume, dry basis.
  - B. In addition to 35 IAC, the air oxidation reactor and first crystallizer, HD-421 (which uses air) is subject to a NSPS for SOCOMI Air Oxidation Processes, 40 CFR 60 Subparts A and III.

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This permit is issued based on the Total Organic Compounds (TOC) from the reactor, which vent through the high pressure absorber (HT-307) and first crystallizer which vent through overhead condenser (HE-411) having a Total Resource Effectiveness (TRE) index above 4.0, pursuant to the NSPS, so as to meet the exemption of 40 CFR 60.610(c). By maintaining the TRE above 4.0, the Permittee need only comply with 40 CFR 60.612, 60.614(f), 60.615(h) and 60.615(l) of the NSPS.

- C. Operation in excess of the hourly VOM limit of Condition 7.2.6 and hourly CO limit of Condition 7.2.6 is allowed during malfunction and breakdown of the catalytic oxidizer for up to 438 hours per year. This condition does not waive compliance with 35 IAC 218.520(a), as the vent without the catalytic oxidizer must comply with the TRE requirements of 35 IAC 218.520(c), and is not subject to the criteria for continued operation during malfunction or breakdown of 35 IAC Part 201 Subpart I.
- ii. 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)

- iii. No person shall cause or allow the emission of more than 8 lb/hr of organic material into the atmosphere from any emission unit except as specified in 218.301, 218.302, 218.303 and 218.303. If no odor nuisance the limitations shall only apply to photochemically reactive material. (35 IAC 218.301 and 218.302)
- iv. The IPA process is subject to 35 IAC 218 Subpart Q, Leaks from synthetic organic chemical manufacturing plants. See Attachment 1.
- v. The IPA process is subject to the Hazardous Organic NESHAP (HON) rule 40 CFR 63 Subparts A, F, G and H as applicable for new source. The HON rule is very chemical specific, that is, for HAPs. For IPA, the organic raw materials are HAPs, but not the product or acetic acid. Thus only tanks containing xylene or by product HAPs or vessels emitting xylene are subject to Subparts G and H.

Only the actual control provisions that the Permittee has chosen to comply with will be cited. For instance, the Permittee uses a catalytic afterburner (oxidizer) as the control device for the reactors so alternative control technologies such as flares will not be discussed.

- A. For the reactor vented to the catalytic oxidizer through the high pressure absorber 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

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carbon using the procedures in Section 63.116 of this Subpart. [40 CFR 63.113(a)(2)]

Note: Compliance with Condition 7.2.3(a)(i)(A) shall be deemed compliance with this requirement.

- B. For the equipment vented to the low pressure and atmospheric absorbers (PD-700 and HT-501), 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) of 40 CFR 63.113 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.

- C. Startup, Shutdown and Malfunction (SSM) Plan

The Permittee is required to have a written Startup, Shutdown and Malfunction (SSM) Plan for the equipment subject to the HON rule as described in Condition 7.2.3(a)(v)(A and B).

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.

- b. An "affected incinerator" is an incinerator which thermally destructs chemical but nonhazardous waste generated on-site and identified in Condition 7.2.2.
  - i. No person shall cause or allow the emission of PM into the atmosphere from any incinerator burning less than 60000 but greater than 2000 lb/hr of refuse to exceed 0.08 gr/scf of effluent gases corrected to 12 percent carbon dioxide. (35 IAC 212.181(b))
  - ii. No person shall cause or allow the emission of CO into the atmosphere from any incinerator to exceed 500 ppm, corrected to 50 percent excess air. (35 IAC 216.141)
- c.
  - i. An "affected storage tank" for the purposes of these unit specific conditions is a storage tank where emissions do not qualify as an insignificant emission unit but is otherwise not subject to any requirements by 35 IAC. See Condition 7.2.4 for the explanation of non-applicability.
  - ii. The two meta-xylene storage tanks as part of the IPA process, are subject to the HON rule 40 CFR 63 Subparts F, G and H. The tanks are classified as Group I tanks per Subpart G.
- d. An "affected hot oil furnace" for the purpose of these unit-specific conditions is a gas-fired fuel combustion unit identified in Condition 7.2.2.

#### 7.2.4 Non-Applicability of Regulations of Concern

- a.
  - i. The requirements of 35 IAC 218.120 for storage tanks of volatile organic liquids do not apply to the meta-xylene or acetic acid storage tanks because the vapor pressure (less than 0.5 psia) is below the applicability level in 35 IAC 218.119.

- ii. The requirements of 35 IAC 218.122(b) for a permanent submerged loading pipe do not apply to the meta-xylene or acetic acid storage tanks because the vapor pressure is below 2.5 psia. However, the meta-xylene tanks are equipped with submerged loading pipes and the acetic acid tank is vented to the atmospheric absorber through the vent header.
- b. The requirement of 35 IAC 216.121 that CO emissions not exceed 200 ppm only applies to fuel combustion units with a firing rate greater than 10.0 mmBtu/hr.
- c. The requirement of 35 IAC 217.141(a) is not applicable because the hot oil furnace is less than 250 mmBtu/hr.

7.2.5 Production Limits, Control Requirements And Work Practices

- a. Production of IPA, measured as IPA prior to purification, shall not exceed 500 million pounds per year. [T1]
- b. The high pressure absorber (HT-307) shall be vented to the catalytic oxidizer (HR-1306), which shall have a minimum destruction efficiency for volatile organic material (VOM) and carbon monoxide (CO) of 98%, except for periods of malfunction and breakdown as allowed by Condition 7.2.3(a)(i)(C). [T1]
- c.
  - i. The residue incinerator (HB-2301) shall be interlocked such that if the temperature in the combustion chamber falls below 1500°F, the feed is shut off. [T1]
  - ii. Feed rate shall not exceed 3200 lb/hr. [T1]
  - iii. Natural gas/biogas mixture shall be the only supplemental fuel for the residue incinerator (HB-2301).

7.2.6 Emission Limitations

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

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- a. Emissions of volatile organic material (VOM) from the IPA process shall not exceed the following [T1]:

<u>Vent Description</u>	<u>VOM Emissions</u>	
	<u>(Lb/Hr<sup>a</sup>)</u>	<u>(Ton/Yr)</u>
High Pressure Absorber (HT-307)	18.0 <sup>b</sup>	9.9
Low Pressure Absorber (PD-700)	10.0	21.9
Atmospheric Absorber (HT-501)	4.8	17.5
Third Crystallizer Ejector (HJ-423)	1.5	4.4
Catalytic Oxidizer (HR-1306) with Bromine Scrubber (HM/HT-1307)	1.2	4.4
M-Xylene Storage Tanks (CF-1608 and 1614) Fugitives		20.0
IPA Hot Oil Furnace (HB-2200)		0.2
IPA Incinerator (HB-2301)	1.2	4.4
Acetic Acid Storage Tank (HF-1404/HE-1404)	1.2	4.4
Incinerator Bottoms Receiver (HF-2302)	160 <sup>c</sup>	29.3
Total		116.8

- <sup>a</sup> Annual based on average hourly emission. VOM emissions excludes Methyl Acetate.  
<sup>b</sup> During malfunction and breakdown of catalytic oxidizer pursuant to Condition 7.2.3.a.i.B.  
<sup>c</sup> lbs/day, not hour

- b. Emissions of carbon monoxide (CO) from the IPA process shall not exceed the following [T1]:

<u>Vent Description</u>	<u>CO Emissions</u>	
	<u>(Lb/Hr)</u>	<u>(Ton/Yr<sup>a</sup>)</u>
High Pressure Absorber (HT-307)	750.1 <sup>b</sup>	136.9
Low Pressure Absorber (PD-700)	1.2	4.4
Atmospheric Absorber (HT-501)	96.0	350.4
Third Crystallizer Ejector (HJ-423)	1.2	4.4
Catalytic Oxidizer (HR-1306) with Bromine Scrubber (HT-1307)	14.4	52.6
IPA Hot Oil Furnace (HB-2200)	0.3	1.3
IPA Incinerator (HB-2301)	9.6	21.9
Total		571.9

- <sup>a</sup> Annual based on average hourly emissions  
<sup>b</sup> During malfunction and breakdown of catalytic oxidizer pursuant to Condition 7.2.3.a.i.B

- c. Emissions of particulate matter (PM) from the IPA process shall not exceed the following [T1]:

<u>Vent Description</u>	PM Emissions	
	(Lb/Hr)	(Ton/Yr)
IPA Incinerator (HB-2301)	6.0	13.1
IPA Silo Dust Collectors (KM-110(2) and 111 (2))	2.0	4.4
IPA Hot Oil Furnace (HB-2200)	0.032	0.14
IPA Dryer Fugitives (PM-600)	0.05	0.2

- d. Emissions of nitrogen oxides (NO<sub>x</sub>) from the IPA process shall not exceed the following [T1]:

<u>Vent Description</u>	NO <sub>x</sub> Emissions	
	(Lb/Hr)	(Ton/Yr)
IPA Incinerator (HB-2301)	5.0	17.5
IPA Hot Oil Furnace (HB-2200)	0.82	3.6
Catalytic Oxidizer (HR-1306)	0.2	0.4

The above VOM and CO limitations were established in Construction Permit 96010057 pursuant to 35 IAC Part 203. These limits ensure that the construction/modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to 35 IAC Part 203, for VOM or major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, for CO.

#### 7.2.7 Testing and Operating Requirements

- a. Upon request by the Illinois EPA, the Permittee shall perform emissions tests to verify the following.
- i. Catalytic oxidizer destruction efficiency required by Condition 7.2.5(b)
  - ii. VOM and CO emission limits in Condition 7.2.6.
  - iii. VOM emissions from the low pressure absorber (PD-700), first Crystallizer Overhead Condenser (HE-411) and atmospheric absorber

(HT-501) and flow rate or other variables necessary to calculate TRE values for the absorber and condenser discharges.

- iv. Emission Test for any HON requirement shall follow the applicable test methods and procedures and compliance procedures summarized below. This is in addition to any applicable testing requirements in 40 CFR 63.8 (as clarified in Table 3 Subpart F).

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

- b. i. The incinerator (HB-2301) combustion chamber shall be preheated to the manufacturer's recommended temperature but not lower than 1500°F, before any waste are sent to the incinerator, and this temperature shall be maintained during incineration.
- ii. The feed rate to the incinerator (HB-2301) shall not exceed 3,200 lbs/hr.
- iii. The type of waste fed to the incinerator shall be similar to the type of waste provided in the emissions test conducted in 1993. Only waste from the IPA manufacturing process shall be incinerated in the IPA incinerator.

7.2.8 Monitoring And Inspection Requirements

- a. The Permittee shall install and operate a continuous monitoring system for the measurement of pre and post catalyst bed temperatures and a flow indicator (for the catalytic oxidizer (HR-1306), in accordance with the provisions of 40 CFR 60.613(a)(1)(ii) and 60.613(a)(2) and the applicable procedures of Appendix B.

- b. The applicable HON rule requirements are summarized below. This is in addition to any applicable monitoring requirements in 40 CFR 63.8 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.114
Transfer Operation	63.127
Process Wastewater	63.143

- c. The Permittee shall monitor the exit liquid temperature and specific gravity of the atmosphere absorber HT-501 for the bottom section. The temperature and specific gravity values necessary to comply with Condition 7.2.6 shall be determined by emissions testing.
- d. The Permittee shall monitor the temperature and flow rate of the scrubbant (water with minor organic combination) to the low pressure absorber PD-700. The temperature and flow values necessary to comply with Condition 7.2.6 shall be determined by emissions testing. In lieu of temperature to the absorber, the temperature at the absorber outlet may be monitored.

NOTE: Testing should be complete when final permit is ready to be issued and actual values can be used.

- e. The Permittee shall monitor the outlet temperature of the first Crystallizer overhead condenser, HE-411. The temperature values necessary to comply with Condition 7.2.6 shall be determined by emissions testing.
- f. The Permittee shall inspect for leaking components as required by 35 IAC 218 Subpart Q.
- g. The residue incinerator (HB-2301) shall be equipped with a device to continuously measure the feed rate when the incinerator is operating and a temperature gauge to continuously measure the temperature of the combustion chamber.

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 IPA process to demonstrate compliance with Conditions 5.5.1 and 7.2.3 through 7.2.8, pursuant to Section 39.5(7)(b) of the Act:

- a. For the catalytic oxidizer (HB-1306)
  - i. Pre- and post-catalyst temperature, continuously.
  - ii. Time periods of operation during malfunction or breakdown.
- b. For the atmospheric absorber (HT-501).
  - i. Exit liquid temperature and specific gravity for bottom section.
  - ii. TRE calculations.
- c. For the low pressure absorber (PD-200).
  - i. Temperature and flow rate of scrubbant stream.
  - ii. TRE calculations.
- d. For the crystallization process.
  - i. Overhead Condenser HE-411 outlet temperature.
  - ii. TRE calculations for HE-411 and He-423 Condensers.
- e. For residue incinerator (HB-2301).
  - i. Feed rate.
  - ii. Combustion chamber temperature.
  - iii. Visual emissions observations.
- f. For units which maintain  $TRE > 1$  without the use of control.

- i. Production/equipment changes.
  - ii. TRE recalculations as a result of process changes.
  - iii. Performance test results.
- g. Applicable records required for the HON rule are summarized below. This is in addition to any applicable general recordkeeping in 40 CFR 63.152, 63.103 and 63.10 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.117 and 63.118
Storage Vessels	63.123
Transfer Operation	63.128 and 63.130
Process Wastewater	63.147
Equipment Leaks	63.181

- h. Records required per 35 IAC 218.425 Subpart Q.

#### 7.2.10 Reporting Requirements

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

- a. Operation of the process without achieving 98% destruction efficiency by the catalytic oxidizer in excess of the 438 hours per year allowed by Condition 7.2.5(a)(i)(C).
- b. Exceeding any of the emission limits in Condition 7.2.6.
- c. Deviations from any applicable NSPS or HON rule requirements.
- d. Applicable reporting requirements by the HON rule are summarized below. This is in addition to any

applicable general reporting requirements in 40 CFR 63.152, 63.103, and 63.10 (as clarified in Table 3 of Subpart F).

<u>Emission Type</u>	<u>Reference (40 CFR)</u>
Process Vents	63.117 and 63.118
Storage Vessels	63.122
Transfer Operation	63.128 and 63.130
Process Wastewater	63.146 and 63.151
Equipment Leaks	63.182

- e. Reporting requirements per 60.614(f) and 60.664(f). As the result of a process change if the recalculation results in a TRE less than 1.0, notify the Illinois EPA within 1 week.
- f. Applicable reporting requirements per 35 IAC 218.426 Subpart Q.

#### 7.2.11 Operational Flexibility/Anticipated Operating Scenarios

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

#### 7.2.12 Compliance Procedures

- a. Emissions from the catalytic oxidizer (HR-1306) are assumed to be in compliance if the temperature increase across the catalyst is in its normal range which is to be determined during the required testing.
- b. Emissions from the scrubber (HT-1307) are assumed to be in compliance if the scrubbant flow rate is in its normal range which is to be determined during the required testing.
- c. Emissions from the low pressure absorber (PD-700) are assumed to be in compliance if the scrubbant flow rate and temperature outlet are in their normal range.

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- d. Emissions from the atmospheric absorber (HT-501) are assumed to be in compliance if the exit liquid temperature and specific gravity for the bottom section are in their normal range which are to be determined during the required testing.
- e. Emissions from the First Crystallizer Overhead Condenser (HE-411) are assumed to be in compliance if the condenser outlet temperature is in its normal range which is to be determined during the required emissions test.
- f. Emissions from the waste incinerator (HB-2301) assumed to be in compliance if the waste feed is less than maximum design capacity, the combustion chamber temperature is in the normal range, and the baghouse is operating normally.
- g. Emissions shall be calculated based on material balance information and emissions rates determined from the most recent emission tests for control equipment. Emissions from tanks and the hot oil furnace are determined by AP-42 emission factors.

7.3 Unit: Purified Isophthalic Acid  
 Control: Various Dust Collectors

7.3.1 Description

Purified isophthalic acid is a quality improvement procedures performed on isophthalic acid (IPA), the manufacture of which is described in the previous Section 7.2. The product is in solid form and thus the principal emissions are PM. A gas-fired hot oil furnace provides some process heat.

7.3.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
16	Feed Silo LF-111	Dust Collector LM-112
17	Reactor (LR-101) and Crystallizers (LD-201, 202, and 203) and Feed Slurry Tank (LD-101)	Vent Scrubber LM-305
18	Four Centrifuges (LB-311A, B, C and D)	Venturi Scrubber LM-313
19	Dryer (LM-312)	Venturi Scrubber LM-314
20	Day Tanks (HF-1210 and 1211)	Dust Collectors (HM-1210(2) and 1211(2))
21	Hot Oil Furnace (LB-501), Gas-Fired, 18.3 mmBtu/hr	None

7.3.3 Applicability Provisions and Applicable Regulations

- a. i. An "affected PIA process unit", for the purpose of these unit specific conditions, is a process unit in which IPA is purified, stored in silos and then sent to packaging and shipping (see Section 7.6) and identified in Condition 7.3.2.
- ii. Each affected PIA process is subject to 35 IAC 212.321. The method for calculating allowable emissions is in Condition 5.2.3(d). Although some of the equipment was in existence prior

to 1972, the process was sufficiently modified in 1997/1998 to make the process subject to 35 IAC 212.321 rather than 212.322.

- b. i. An "affected hot oil furnace" for the purpose of these unit-specific conditions is a gas-fired fuel combustion unit identified in Condition 7.3.2.
- ii. No person shall cause or allow the emission of CO into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 mmBtu/hr to exceed 200 ppm, corrected to 50 percent excess air. (35 IAC 216.121)
- c. The PIA process reactor venting to vent scrubber (LM-305) and Ventura scrubbers (LM-313 and LM-314) are subject to 35 IAC Subpart Q (218.431 through 218.436) for SOCOMI reactor process.

This permit is issued based on volatile organic material (VOM) from PIA process reactor venting to vent scrubber (LM-305) and Ventura scrubbers (LM-313 and LM-314) having a total VOM concentration of less than 500 ppmv, less methane and ethane, as measured by USEPA Method 18 and therefore exempt from VOM emission control requirements of 35 IAC 218.432 pursuant to 35 IAC 218.431(b)(5). The Permittee need only comply with the applicable performance and testing requirements of 35 IAC 218.433 and the recordkeeping and reporting requirements of 35 IAC 218.435. See Condition 7.3.9.

#### 7.3.4 Non-Applicability of Regulations of Concern

- a. The requirements of 35 IAC 217.141(a), which limits NO<sub>x</sub> emissions to 0.3 lb/mmBtu, do not apply since the hot oil furnace heat input is less than 250 mmBtu/hr.
- b. The requirements of 35 IAC 218 Subpart Q for leak detection do not apply since the material being handled is a solid and contains less than 10% VOM.

7.3.5 Control Requirements and Production Limits

- a. The dust collectors shall be operated in accordance with manufacturer recommended practice so as to achieve 99% PM removal efficiency.
- b. This process converts IPA, as produced by the equipment in Section 7.2. Condition 7.2.5 includes a production limit for IPA, which effectively limits the throughput of this process.

7.3.6 Emission Limitations

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

- a. Emissions of particulate matter (PM) from the PIA process shall not exceed the following:

<u>Vent Description</u>	<u>PM Emissions</u> <u>(Lb/Hr) (Ton/Yr)</u>	
Feed Silo D.C. <sup>a</sup> (LM-112)	0.6	1.8
Day Tank D.C. (HM-1210(2) and 1211(2))	0.4	1.1
PIA Hot Oil Furnace (LB-510)	0.25	1.1

<sup>a</sup> D.C. = Dust Collector(s)

The above limitations contain revisions to previously issued Permit 90040087. The source has requested that the Illinois EPA establish conditions in this permit that allow various refinements from the conditions of this aforementioned permit, consistent with the information provided in the CAAPP application. The source has requested these revisions and has addressed the applicability and compliance of Title I of the CAA, specifically 35 IAC Part 203, Major Stationary Sources Construction and Modification and/or 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits continue to ensure that the construction and/or modification addressed in this permit does not constitute a new major source or major modification pursuant to these rules. These limits are the primary enforcement mechanism for the equipment and activities

permitted in this permit and the information in the CAAPP application contains the most current and accurate information for the source. Specifically, the throughput rate for the upstream equipment was increased after this equipment was installed and the construction permit did not account for increase in downstream equipment. [T1R]

- b. Emissions of volatile organic material (VOM) from the PIA process shall not exceed the following:

<u>Vent Description</u>	<u>VOM Emissions</u> (Lb/Hr) (Ton/Yr)	
Vent Scrubber (LM-350)	4.42	16.1
Venturi Scrubber (LM-313 and LM-314)	0.67	2.4

The above limitations are being established in this permit pursuant to Title I of the CAA, specifically 35 IAC Part 203, Major Stationary Sources Construction and Modification. The source has requested that the Illinois EPA establish emission limitations and other appropriate terms and conditions in this permit that limit the VOM emissions from the affected scrubbers below the levels that would trigger the applicability of these rules, consistent with the information provided in the CAAPP application. Specifically, this process was primarily concerned with PM emissions as the material is a solid, but an emissions test after construction revealed that VOM is emitted. [T1N]

7.3.7 Testing Requirements

- a. Upon request of the Illinois EPA, PM emissions from any of the dust collectors shall be measured and the PM removal efficiency determined.
- b. Upon request by the Illinois EPA, the Permittee shall measure VOM concentration (ppmv) and/or emission rate (lb/hr) to determine compliance with Conditions 7.3.3(c) and 7.3.6(b).

7.3.8 Monitoring and Inspection Requirements

The Permittee shall make weekly observations of visible emissions from or pressure drop across each dust

collector. If the visible emissions are above normal, the bags shall be inspected for possible breaks or a pressure drop test observed to verify that the bags are not broken.

#### 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 dust collector to demonstrate compliance with Conditions 5.5.1 and 7.3.8 pursuant to Section 39.5(7)(b) of the Act:

Applicable records required by 35 IAC 218.435 for VOM concentration for PIA process vent scrubbers.

#### 7.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of an affected PIA process unit deviating 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:

Continued operation of process with visible emissions or pressure drop indicating a bag is probably broken.

#### 7.3.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

#### 7.3.12 Compliance Procedures

- a. Compliance with the applicable PM regulations is assumed if the dust collectors are operated with visible emissions readings indicating no broken bags. Emissions calculations shall be performed using previous material balance and emission testing information.

7.4 Unit Trimellitic Anhydride Unit  
 Primary Control: Regenerative Thermal Oxidizer

7.4.1 Description

Trimellitic anhydride (TMA) is produced by the partial oxidation of psuedocumene using a catalyst to form an intermediate, which is then dehydrated to form TMA. There are condensers and absorbers for solvent recovery and product separation which eventually are vented to a regenerative thermal oxidizer.

Since the reaction is performed in an oxygen deficient atmosphere, CO is produced in addition to VOM. The CO is converted to CO<sub>2</sub> by the thermal oxidizer. The dehydrators are vented through condensers to the thermal oxidizer. Stripper bottoms as part of solvent recovery are incinerated in a solid waste incinerator which has a baghouse. The product is a solid in flake form and shipped in bags.

The equipment listed in Condition 7.4.2 is only a brief listing of equipment with vents. There may be other pieces of equipment vented to the emission units listed.

7.4.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
22	Reaction Section (Three Batch Reactors, MR-301, 302, 303) to High Pressure Absorber (MT-304) to Oxidizer	Regenerative Thermal Oxidizer (MB-1050)
23	Feed Preparation Crystallizer (MD-403) <sup>a</sup> and Crystallizer Filter to Low Pressure Absorber (MT-802) to Oxidizer	Regenerative Thermal Oxidizer (MB-1050)
24	Dehydration/Distillation (MD-403 and 404, MD-603 and MD-754)	Fume Scrubber MD-705
25	Dehydration/Distillation (MD-602 and MD-753 through MD-652)	Barometric Condenser MD-766A/B
26	Flaker (MM-748)	Dust Collector MM-749
27	Bagging	Dust Collectors (MM-602/603)

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Emission Unit	Description	Emission Control Equipment
28	TMA Residue (Liquid Waste) Incinerator (MB-1002) with Natural Gas/Biogas Supplemental Fuel	Baghouse (MM-1010, MM-1011, MM-1012, MM-1013)
29	Psuedocumene Storage Tanks (CF-1609, CF-1612, and CF-1613)	None
30	Acetic Acid Storage Tank (MF-1101)	None
31	Hot Oil Furnace (MB-1025), Gas-Fired, 45.8 mmBtu/hr	None

<sup>a</sup> Can also vent directly to thermal oxidizer or to fume scrubber (MD-705)

7.4.3 Applicability Provisions and Applicable Regulations

- a. i. An "affected air oxidation process", for the purpose of these unit-specific conditions, is a process in which air or a combination of air and oxygen in combination with one or more organic materials react to produce one or more organic compounds. The requirements for an air oxidation process are listed in 35 IAC 218.520. The residue incinerator (MB-1002), hot oil furnace (MB-1025), dust collectors (MM-749), MM-602, and MM-603), and storage tanks (CF-1609, CF-1612, and CF-1613) are not subject to the air oxidation rule.
  - A. The vent oxidizer (MB-1050) is not subject to 35 IAC 218.520(a) as long as the process vent streams to the oxidizer meet TRE greater than 6.0. However, the vent oxidizer is required to meet the VOM and CO emissions control requirements established in Construction Permit 89050020 (See Condition 7.4.5(b)(ii)).
  - B. the absorbers MT-304 and MT-802 process vent streams (vent only when oxidizer is down) are exempt from the limitations of

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218.520(a) as long as the TRE is greater than 6.0, pursuant to 35 IAC 218.520(c).

- C. The fume scrubber MD-705 and barometric condenser MD-766A/B process vent streams are exempt from the limitations of 218.520(a) as long as the TRE is greater than 6.0, pursuant to 35 IAC 218.520(c).
  - D. An air oxidation process with a TRE of 6.0 or less shall comply with the provisions of 218.520(a).
  - E. TRE index calculations shall be performed using the equation and procedures in 35 IAC 218.520(c)(2) and the coefficients in Appendix D of 35 IAC. If there is more than one process vent stream, the TRE shall be the more stringent of either the TRE based upon a combination of the process vent streams or the TRE based upon each individual process vent stream.
- ii. 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)
  - iii. No person shall cause or allow the emission of more than 8 lb/hr of organic material into the atmosphere from any emission unit except as specified in 218.301, 218.302, 218.303 and

218.304. If no odor nuisance the limitations shall only apply to photochemically reactive material. (35 IAC 218.301 and 218.302)

- b. i. An "affected incinerator" is an incinerator which thermally destructs liquid (molten) chemical but nonhazardous waste generated on-site and identified in Condition 7.4.2.
- ii. No person shall cause or allow the emission of PM into the atmosphere from any incinerator burning less than 60000 but greater than 2000 lb/hr of refuse to exceed 0.08 gr/scf of effluent gases corrected to 12 percent carbon dioxide. (35 IAC 212.181(b))
- iii. No person shall cause or allow the emission of CO into the atmosphere from any incinerator to exceed 500 ppm, corrected to 50 percent excess air. (35 IAC 216.141)
- c. An "affected storage tank" for the purposes of these unit specific conditions is a storage tank where emissions do not qualify as an insignificant emission unit but is otherwise not subject to any requirements by 35 IAC.
- d. i. An "affected hot oil furnace" for the purpose of these unit-specific conditions is a gas-fired fuel combustion unit identified in Condition 7.4.2.
- ii. No person shall cause or allow the emission of CO into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 mmBtu/hr to exceed 200 ppm, corrected to 50 percent excess air. (35 IAC 216.121)
- iii. The hot oil furnace is subject to New Source Performance Standard (NSPS) for Small Industrial - Commercial - Institutional Steam Generating Units, 40 CFR 60, Subparts A and Dc. Since the boiler is fired with natural gas/biogas only, the boiler is not subject to

any NSPS standard or testing, only  
recordkeeping to verify only gas is burned.

- e. Although all process emission units for which construction or modification commenced prior to April 14, 1972, except the incinerator, are subject to 35 IAC 212.321, only the flaking and bagging operation emit any PM. The applicable method for calculating allowable PM emissions are specified in 35 IAC 212.321. (See Condition 5.2.3(d))

#### 7.4.4 Non-Applicability of Regulations of Concern

- a. The TMA process is not subject to the HON rule because it is not on Table 1 of 40 CFR 63 Subpart F, the list of chemicals to which the rule applies.
- b. The TMA process is not subject to the NSPS, 40 CFR 60 Subpart III because TMA is not one of the chemicals affected per the list in § 60.617 and the primary process equipment was constructed prior to the applicability date of October 21, 1983.
- c. The TMA process is not subject to 35 IAC 218 Subpart Q, leaks from synthetic organics chemical manufacturing plants because TMA is not one of the chemicals listed in Appendix A of Part 218, the list of chemicals to which the requirements apply.
- d.
  - i. The requirements of 35 IAC 218.120 for storage tanks of volatile organic liquids do not apply to the psuedocumene or wastewater storage tanks because the vapor pressure (less than 0.5 psia) is below the applicability level in 35 IAC 218.119.
  - ii. The requirements of 35 IAC 218.122(b) for a permanent submerged loading pipe do not apply to the psuedocumene or wastewater storage tanks because the vapor pressure is below 2.5 psia.

#### 7.4.5 Control Requirements and Operational And Production Limits

- a.
  - i. TMA production shall not exceed 12,500,000 lbs/mo or 120,000,000 lb/yr [T1].

- ii. Operation shall not exceed 8322 hr/yr. Operation is defined as the reaction part of the process, not final product processing such as flaking or bagging.
  
- b. i. The thermal oxidizer (MB-1050) shall be operated so as to destroy at least 98.5% of the VOM and 95% of the CO which would otherwise be emitted to the atmosphere, and shall be on stream at least 95% of the time the emission equipment is operating, determined on an annual basis. Winter shutdown of the thermal oxidizer pursuant to 35 IAC 218.106 is not permitted, except for the 5% of the time previously noted.

The above limitations were established in Construction Permit 89050020, 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 Title I of the CAA, specifically 35 IAC Part 203. [T1]

- ii. The thermal oxidizer combustion chamber shall be preheated to 1600EF before operation is begun. This temperature shall be maintained when the equipment ducted to the thermal oxidizer is operating. This was the temperature during the emissions tests in January 1993.
  
- c. The combustion chamber in the TMA incinerator (MB-1002) shall be preheated to the manufacturer's recommended temperature but not lower than 1610EF, before any waste is loaded into the incinerator, and this temperature shall be maintained during incineration.
  
- d. i. The MD-705 Fume Scrubber shall be operated so as to remove at least 85% of the VOM entering it when emission equipment is operating but the oxidizer is not such that the Total Resource Effectiveness Index (TRE) is greater

than 6.0, as defined and calculated in 35 IAC 218.520(c).

- ii. When the oxidizer is down, the absorbers (MT-304 and MT-802) shall be operated such that the TRE of each stream is greater than 6.0, as defined and calculated in 35 IAC 218.520(c).
- e. i. Only waste from the TMA manufacturing process shall be incinerated in the TMA incinerator and at a rate not to exceed 3723 pounds per hour.
- ii. The Permittee shall observe the stack from the TMA incinerator weekly for visible emissions increases that may indicate a broken bag. This observation shall be entered on an operations log sheet.
- iii. If abnormal visible emissions are observed the individual baghouse compartments shall be isolated to determine which compartment has the possible broken bag.
- iv. The bag shall be replaced or other maintenance done to return opacity to normal and information entered on the log operations sheet.
- v. Natural gas/biogas shall be the only supplemental fuel.

7.4.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected TMA plant is subject to the following [T1]:

- a. Emissions of VOM from process equipment shall not exceed the following:

	Average (lb/hr)	Maximum (lb/hr) (ton/yr)	
VOM <sup>a</sup> to Oxidizer	46	65	201

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<sup>a</sup> VOM does not include emissions of trimellitic anhydride (TMA). TMA is a solid at room temperature and emissions are treated as particulate matter (PM). Emission of PM after control are included in c.

	Maximum (lb/hr) (ton/yr)	
<u>Mode 1</u>		
VOM Emissions from Oxidizer with Oxidizer and MD-705 Scrubber Operating		
1.5	6.2	
<u>Mode 2</u>		
VOM Emissions from Scrubber MD-705 Direct to Atmosphere when Oxidizer not Operating <sup>b, c</sup>		
1.0	<u>0.2</u>	
		Total 6.4

<sup>b</sup> The MD-705 scrubber will be operating when the thermal oxidizer is operating. When the thermal oxidizer is not operating, the crystallizer ejector vent shall also be routed to the MD-705 scrubber, which operates continuously.

<sup>c</sup> Negligible emissions from the oxidizer pilot light may occur during this mode of operation.

b. Emissions of particulate matter (PM) shall not exceed the following:

Source	PM Emissions (lb/hr) (ton/yr)	
Incinerator/Baghouse	7.2	30.0
Bagging Operation	1.5	<u>6.6</u>
		Total 37.43

c. i. Emission of PM from the flaker modification sources shall not exceed the following:

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<u>Item of Equipment</u>	<u>Operating Hours (Hr/Yr)</u>	<u>PM Emissions (Lb/Hr)(T/Yr)</u>	
Flaker (MM-748) and Belt Conveyors (MP-703 & 704)			
Dust Collector (MM-749)	8,322	5.2	21.6

- ii. This permit is issued based on negligible emissions of PM from all other flaker system vents other than the control device. For this purpose, emissions shall not exceed nominal emissions rates of 0.1 lb/hour and 0.44 ton/year.
  
- d. Emissions of nitrogen oxide (NO<sub>x</sub>) and carbon monoxide (CO) shall not exceed the following:

<u>Source</u>	<u>NO<sub>x</sub> Emissions (lb/hr) (T/yr)</u>		<u>CO Emissions (lb/hr) (T/yr)</u>	
Hot Oil Furnace	3.21	14.04	4.2	18.4
Incinerator/Baghouse	3.6	15.0	3.4	14.2
Low Pressure Absorber <sup>c</sup>			20.0	4.0
Thermal Oxidizer	3.0	12.5	20.0	83.2
High Pressure Absorber <sup>c</sup>	—	—	540.0	<u>112.3</u>
Total	9.81	41.54		232.1

<sup>c</sup> Oxidizer not in operation

The above limitations (a through e) were established in Construction Permits 89050020 and 98020067 pursuant to 35 IAC Part 203. These limits ensure that the construction/modification addressed in the aforementioned Construction Permit does not constitute a new major source or major modification pursuant to 35 IAC Part 203 [T1].

7.4.7 Testing Requirements

Upon request by the Illinois EPA, emission tests shall be conducted for one or all of the following:

- a. Thermal oxidizer VOM emission

- b. Thermal oxidizer destruction efficiency.
- c. Low and high pressure absorber VOM emission rates and other variables necessary to calculate a TRE value when the thermal oxidizer is not operating.
- d. Fume scrubber (MD-705) VOM emission rate and other variable necessary to calculate a TRE value, both with and without the thermal oxidizer operating.
- e. PM emissions from incinerator baghouse
- f. PM emissions from flaker dust collector

#### 7.4.8 Monitoring Requirements

- a. The thermal oxidizer and waste residue incinerator shall each be equipped with a continuous temperature indicator for the thermal oxidizer and incinerator combustion chamber temperature.
- b. The visible emissions from dust collector MM-749, which controls the particulate emissions from the flaker and associated conveyor, and the visible emissions from baghouses MM-1010, MM-1011, MM-1012, and MM-1013, which control the particulate emissions from the incinerator MB-1002 shall be observed weekly for possible bag breakage.

#### 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 piece of equipment listed in Condition 7.4.2 to demonstrate compliance with Conditions 5.5.1 and Condition 7.4.3, 7.4.5 or 7.4.6, pursuant to Section 39.5(7)(b) of the Act:

- a. Temperature in combustion chamber of both the thermal oxidizer and the waste residue incinerator.
- b. TMA production.

- c. Total unit operating hours and hours with thermal oxidizer not operating.
- d. Opacity readings on flaker dust collector and incinerator baghouse.
- e. Amount of each fuel combusted in hot oil furnace, MB-1025 each day.
- f. Dimensions of psuedocumene and acetic acid storage vessels and analysis of capacity of storage vessel.

#### 7.4.10 Reporting Requirements

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

- a. Production or operating hours in excess of limits in Condition 7.4.5.a.
- b. The thermal oxidizer is not operating to:
  - i. Destroy 98.5% of incoming VOM
  - ii. Not on stream 95% of time
  - iii. Not operating at 1600EF when equipment vented to it is operating.
- c. Incinerator combustion chamber lower than 1610EF when material is being fed.
- d. Notify the Illinois EPA within 30 days when maximum true vapor pressure of liquid in the psuedocumene or acetic acid storage tanks exceed 0.75 psia.

#### 7.4.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to the TMA process without prior notification to the Illinois EPA or revision of this permit. This condition does not affect the

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

The process may operate 5% of the time on an annual basis (438 hr/yr) with the thermal oxidizer not operating and the crystallization process vented to the fume scrubber. During this time the TRE from the High Pressure Absorber (MT-304) and Low Pressure Absorber (MT-802) are greater than 6.0.

#### 7.4.12 Compliance Procedures

- a. i. Operation of the thermal oxidizer at the combustion chamber temperature required by Condition 7.4.5 is assured to achieve compliance with the following:
  - A. The destruction efficiency requirement of 35 IAC 218.520(a) as listed in Condition 7.4.3.(a).
  - B. The destruction efficiency requirement established in Construction Permit 89050020 as listed in 7.4.5(b)(i).
  - C. The emission limits in Condition 7.4.6 for the equipment vented to it based upon information from the emissions test conducted on January 6 and 7, 1993.
- ii. When the thermal oxidizer is not operating (up to 5% of the time), compliance is achieved by a TRE above 6.0.
- iii. Compliance with the thermal oxidizer combustion chamber temperature limits in Condition 7.4.5 shall be based on daily average of continuous combustion chamber temperature values. However, any hourly temperature more than 200°F below the normal operating temperature of 1600°F must be included in the 5% of hours for the thermal oxidizer not operating.

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- b. i. Compliance with the residue incinerator PM and CO rules in Condition 7.4.3 and the emission limits listed in Condition 7.4.6 is assumed to be achieved by operation of the combustion chamber at the temperature specified in Condition 7.4.5 and operation of the baghouse as specified in Condition 7.4.5(d)
- ii. Compliance with the residue incinerator combustion chamber temperature limits in Condition 7.4.5 shall be based on daily average of continuous combustion chamber temperature values.
- c. Compliance with the CO and NO<sub>x</sub> emission limits listed in Condition 7.4.6 for the hot oil furnace is assumed by proper operation of the furnace.
- d. Compliance with the PM emission limits for the flaking and bagging operation is assumed by proper operation of the baghouse or dust collector on each item.
- e. VOM emissions from TMA process shall be calculated using the results of pervious material balance and emission testing information for the process.

7.5 Unit Boilers and Cooling Towers

7.5.1 Description

The plant has three boilers to produce steam for process heat. The Permittee also sells some steam to a chemical plant next door that owns and operates a polystyrene process that used to be owned by the Permittee.

7.5.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Maximum Firing Rate mmBtu/hr	Emission Control Equipment
32	Gas-Fired Boiler CB-703	225.0	None
33	Gas-Fired Boiler CB-704	225.0	None
34	Gas-Fired Boiler CB-706	370.2	Low NO <sub>x</sub> Burners
35	Cooling Towers CU-401, CU-402 and CU-403		None

7.5.3 Applicability Provisions and Applicable Regulations

a. An "affected boiler" for the purposes of these unit specific conditions is a gas-fired boiler identified in Condition 7.5.2.

b. All three boilers are subject to 35 IAC 216.121:

The emission of CO into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 mmBtu/hr shall not exceed 200 ppm, corrected to 50 percent excess air.

c. Only boiler CB-706 is subject to 35 IAC 217.121:

The emissions of NO<sub>x</sub> into the atmosphere in any one hour period from any new fuel combustion emission source with an actual heat input equal to or greater than 250 mmBtu/hr shall not exceed the following standards and limitations.

- i. For gaseous fossil fuel firing, 0.20 lbs/mmBtu of actual heat input;
- d. All three boilers are subject to the source-wide opacity limit in Condition 5.2.2.b.
- e. Boiler CB-706 is subject to NSPS, 40 CFR 60 Subparts A, D and Db.
  - i. Emissions of NO<sub>x</sub> shall not exceed 0.1 lb/mmBtu for low heat release rate. (40 CFR 60.44b(a))
  - ii. Emissions of PM shall not exceed 0.10 lbs/mmBtu. (40 CFR 60.42(a)(1))
  - iii. The opacity from the boiler shall not exceed 20% except for one six-minute period per hour of not more than 27% opacity. (40 CFR 60.42(a)(2))
- f.
  - i. An "affected cooling tower" for purposes of these unit specific conditions is a cooling tower identified in Condition 7.5.2.
  - ii. The affected cooling towers are subject to 35 IAC 218 Subpart TT but are not subject to the control requirements of 35 IAC 218.986(d) because the source meets the exemption level of 35 IAC 218.980(b).
  - iii. The affected cooling towers are subject to the Hazardous Organic NESHAP (HON) rule 40 CFR 63 Subparts F (Heat Exchange System Requirements, 63.104).

7.5.4 Non-Applicability of Regulations of Concern

- a. 35 IAC 217.141, which limits emissions of NO<sub>x</sub> from existing fuel combustion units does not apply to CB-703 and CB-704 because their firing rate is less than 250 mmBtu/hr. 35 IAC 217.141 does not apply to CB-706 because it is not an existing combustion unit.
- b. The NSPS does not apply to CB-703 or CB-704 because they were in operation prior to the applicability dates.

- c. There are no applicable requirements for PM or SO<sub>2</sub> in 35 IAC for affected boilers firing gas.

7.5.5 Operational Requirements [T1]

- a. i. Boiler CB-706 shall only be fired on gas at a rate not to exceed 370.2 mmBtu/hr. Combined natural gas/biogas usage shall not exceed 3567 x 10<sup>6</sup> scf/yr.
- ii. The gas that is fired shall primarily be pipeline natural gas but may include biogas generated onsite from the Permittee's wastewater treatment plant.
- b. Boiler CB-706 shall be equipped with a low NO<sub>x</sub> burner and operated in such a manner that limits emissions of NO<sub>x</sub> to 18.51 lb/hr, equivalent to 0.05 lb/mmBtu at full firing rate. CO emissions shall not exceed 90 lb/mmscf. These limits are conditions of Construction permit 97120078, which in conjunction with Conditions 7.5.5(a)(i) and 7.5.6, ensures that construction of boiler CB-706 is not a major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21.

7.5.6 Emission Limitations

- a. In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected boiler CB-706 is subject to the following:

Emissions from boiler CB-706 shall not exceed the following [T1]:

	Emission Limits	
	(Ton/Mo)	(Ton/Yr)
Nitrogen Oxides	6.9	81.1
Particulate Mater	0.3	3.35
Carbon Monoxide	13.2	155.7
Sulfur Dioxide	0.1	1.2
Volatile Organic Material	0.81	9.7

The above limitations were established in Construction Permit 97120078 pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction/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.

- b. This permit is issued based on the VOM emissions from the three cooling water towers (CU-401, -402, -403) not exceeding 9.0 tons/year and VOM emissions from all emission units subject to 35 IAC 218 Subpart TT, which include the cooling water towers and groundwater decanter system, not exceeding 24.9 tons/yr.

#### 7.5.7 Operating and Testing Requirements

- a. Upon request by the Illinois EPA, boiler CB-706 shall be tested for NO<sub>x</sub> or CO emissions, using approved testing methodology.
- b. Emission tests for the HON rule as it applied to the cooling towers shall follow the applicable test methods and procedures and compliance procedures as specified in 40 CFR 63.104.

#### 7.5.8 Monitoring Requirements

- a. For CB-706 boiler only, the Permittee shall maintain and operate a continuous monitoring (CMS) system for measuring the NO<sub>x</sub> emissions discharged to the atmosphere and record the output of the system in lb/mmBtu. This system shall be operated during all periods of operation of the affected boiler except for continuous monitoring system breakdowns and repairs. Data is to be recorded during calibration checks, and zero and span adjustments. [40 CFR 60.48b(b, c, d)]
- b. Monitoring for the HON rule as it applies to the cooling towers shall follow the applicable monitoring requirements as specified in 40 CFR 63.104.

7.5.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected boiler to demonstrate compliance with Conditions 5.5.1, 35 IAC 217.121 and the NSPS, 40 CFR 60 Subparts D and Db, pursuant to Section 39.5(7)(b) of the Act:

- a. For boilers CB-703 and CB-704, the total (combined or individual) natural gas/biogas usage in ft<sup>3</sup>/day per boiler.
- b. For each operating day for boiler CB-706,
  - i. Calendar date [40 CFR 60.49b(g)(1)];
  - ii. Total daily combined natural gas/biogas usage for the boiler (ft<sup>3</sup>/day) [40 CFR 60.49b(d)];
  - iii. The average hourly nitrogen oxides emission rates (expressed in lb/million Btu heat input) measured or predicted [40 CFR 60.49b(g)(2)];
  - iv. The 30-day average nitrogen oxides emission rates (lb/million Btu heat input) calculated at the end of each affected boiler operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 affected boiler operating days [40 CFR 60.49b(g)(3)];
  - v. Identification of the boiler operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emissions standards under 40 CFR 60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken [40 CFR 60.49b(g)(4)];
  - vi. Identification for the affected boiler operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient and a description of

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- corrective actions taken [40 CFR 60.49b(g)(5)];
- vii. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data [40 CFR 60.49b(g)(6)];
  - viii. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted [40 CFR 60.49b(g)(7)];
  - ix. Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system [40 CFR 60.49b(g)(8)];
  - x. Description of any modifications to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3 [40 CFR 60.49b(g)(9)]; and
  - xi. Results of daily CMS drift tests and quarterly accuracy assessments as required under Appendix F, Procedure 1 of 40 CFR 60 [40 CFR 60.49b(g)(10)];
  - xii. Calculations of the annual capacity factor, determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar quarter, per quarter [40 CFR 60.49b(d)].
- c. Annual aggregate NO<sub>x</sub>, PM, SO<sub>2</sub>, and VOM emissions from each affected boiler, based on fuel consumption and the applicable emission factors or monitoring/test data, with supporting calculations.
  - d. The Permittee shall perform an annual test for VOM concentration in each cooling tower to verify the emission rate in Condition 7.5.6.b.
  - e. Recordkeeping for the HON rule as it applies to the cooling towers shall follow the applicable

recordkeeping requirements as specified in 40 CFR 63.104.

#### 7.5.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of affected boiler CB-706 and cooling towers deviating 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. Quarterly reports postmarked by the 30th day following the end of each calendar quarter of NO<sub>x</sub> emissions in excess of NSPS, as required by 40 CFR 60.49b.
- b. Monthly or annual emissions in excess of limitations of Condition 7.5.6.
- c. The Permittee determines that the potential to emit of emission units subject to 35 IAC 218 Subpart TT exceeds 25 tons/yr.
- d. Reporting for the HON rule as it applies to the cooling towers shall follow the applicable reporting requirements as specified in 40 CFR 63.104 and 63.152.

#### 7.5.11 Operational Flexibility/Anticipated Operating Scenarios

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

The amount of biogas burned may be in any percentage above or below the normal 6%.

#### 7.5.12 Compliance Procedures

- a. Compliance with Condition 7.5.3.(b) and (d) and 7.5.3.(e)(ii) and (iii) is assumed to be achieved by

work-practices inherent in operation of these gas-fired boilers.

- b. Compliance with Condition 7.5.3 (c) and 7.5.3.(e)(i) is demonstrated by and emissions calculated by operation of the CMS required by the NSPS Condition 7.5.8 and the recordkeeping requirements of the NSPS and Condition 7.5.9.

Upon request by the Illinois EPA or USEPA, the Permittee shall determine compliance with the nitrogen oxides standards as required in Condition 7.5.3.e.i through the use of a 30-day performance test. During periods when performance tests are not requested, nitrogen oxides emissions data collected pursuant to 40 CFR 60.48b(g)(1) or 60.48b(g)(2) are used to calculate a 30-day rolling average emission rate on a daily basis and used to prepare excess emission reports, but will not be used to determine compliance with the nitrogen oxide emissions standards. A new 30-day rolling average emission rate is calculated each affected boiler operating day as the average of all the hourly nitrogen oxides emission data for the preceding 30 affected boiler operating days.

The 1-hour average nitrogen oxides emission rates measured by the continuous nitrogen oxides monitor required by 40 CFR 60.48b(b) and required under 40 CFR 60.13(h) shall be expressed in lb/million Btu heat input and shall be used to calculate the average emission rates under 40 CFR 60.44b. The 1-hour averages shall be calculated using the data points required under 40 CFR 60.13(b). At least 2 data points must be used to calculate each 1-hour average. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operations of the CMS.

7.6 Unit Solid Material Storage, Packaging and Shipping  
 Control Dust Collectors

7.6.1 Description

The packaging and shipping considered in this area are solid products that are shipped in bags or bulk. Liquid products are considered under storage transfer for the previously discussed products.

The dust collectors on the warehouse vacuum systems are an inherent part of the system rather than true control devices. Although some vacuum systems can be considered insignificant emission units, these were not since they handle chemical spills rather than refuse.

7.6.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
36	Three PIA Silos DF-100, DF-200, F-707	Dust Collectors DM-112, DM-213, M-718
37	Three PIA Packaging Processes DF-100, DF-200, F-707	Dust Collectors DM-100, DM-200, M-708
38	Four Terephthalic Acid (TA) Silos BF-406, 407, 410, F-706	Dust Collectors BM-406, BM-407, BM-410, M-706
39	TA Packaging Operation (Bags or Bulk)	Dust Collector BM-701
40	PIA Warehouse Vacuum System	Dust Collector DM-105
41	TMA Warehouse Vacuum System	Dust Collector MM-604A/B

7.6.3 Applicability Provisions and Applicable Regulations

- a. An "affected storage silo or packaging operation" for the purpose of these unit specific conditions is a silo or packaging operation identified in Condition 7.6.2 that is used to store materials that are powder, solid or crystalline in form. The material may be a product or a material received in bulk form and packaged for shipping.

- b. The packaging system is subject to 35 IAC 212.321. The method for calculating allowable emissions is in Condition 5.2.3(d).

7.6.4 Non-Applicability of Regulations of Concern

- a. Packaging and shipping deals exclusively with a solid product and no section of 35 IAC Part 218 is applicable to these processes.
- b. The PIA and TMA warehouse vacuum systems are not subject to 35 IAC 212.321 because a process weight rate cannot be determined.

7.6.5 Control and Operational Requirements

- a. The dust collectors shall be operated in accordance with manufacturer recommended practices so as to reduce uncontrolled PM emissions by 99% and keep the opacity below the limits in Condition 5.2.2.
- b. This process primarily packages and ships products manufactured by processes described in previous Sections. Each of those sections has a production limit which effectively limits throughput of this equipment.

7.6.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected storage silos and packaging operation are subject to the following:

Emissions of PM from some of the dust collectors (bag filters) shall not exceed the following [T1]:

<u>Control Equipment</u> <u>Designation</u>	<u>PM Emissions</u>	
	<u>Lb/hr</u>	<u>Ton/yr</u>
BM-406	0.6	2.63
BM-407	0.25	1.10
BM-410	0.25	1.10
BM-701	07	3.07

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<u>Control Equipment Designation</u>	<u>PM Emissions</u>	
	<u>Lb/hr</u>	<u>Ton/yr</u>
DM-100	1.5	6.6
DM-200	1.53	6.7
M-708	6.0	26.3
M-718	06	2.6

The above limitations were established in Construction Permit 93080043, 94080079 or 96010057, 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 Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1]. Limits for CO have been deleted because the emissions arose from inert gas generated on-site by combustion. Those generators have been replaced by use of purchased nitrogen which does not contain CO.

7.6.7 Operating Requirements

None

7.6.8 Monitoring Requirements

The dust collectors discharge shall be observed weekly for indications of a broken bag. Filters should be replaced as required.

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 silo or packaging operation to demonstrate compliance with Conditions 5.5.1 and 35 IAC 212.123 and 212.321, pursuant to Section 39.5(7)(b) of the Act:

- a. Material throughput (lb/mo).
- b. Visual observations of dust collector discharge (weekly).

7.6.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of an affected silo or packaging operation deviating 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:

Continued operation during known bag breakage or opacity exceeding 35 IAC 212.123.

7.6.11 Operational Flexibility/Anticipated Operating Scenarios

The Permittee is authorized to make the following physical or operational change with respect to silos or packaging 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:

In addition to IPA and PIA, which are produced at this source, Amoco may ship in similar products, such as terephthalic acid, and repackage for shipment.

7.6.12 Compliance Procedures

Compliance with the PM emission limits and opacity requirements for the packaging and shipping operation is assumed by proper operation as recommended by the manufacturer of the baghouse or dust collector on each unit.

7.7 Unit: Wastewater Treatment System

7.7.1 Description

The waste treatment system handles some streams that need minimum treatment and are sent to a polishing lagoon and then to the nearby river. Other streams are sent to a wastewater feed tank and then to an anaerobic reactor where microbes convert the dissolved organic chemicals to biogas (methane) and CO<sub>2</sub>. The biogas is dried and if it has sufficient Btu content is sent to the plant fuel gas header. If the quality is not high enough, the gas is burned in a flare.

Sludge from the aeration basin or clarifiers is sent to a sludge drier equipped with a scrubber.

7.7.2 List of Emission Units and Production Control Equipment

Emission Unit	Description	Emission Control Equipment
42	The following low emission units open or vented to atmosphere: Storage Tank (MF-2001, open) Aeration Basins, Clarifiers, Groundwater Decanter System, Sludge Drying Ponds	None
43	Anaerobic Reactor (Er-701)	Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Header
44	Biogas Dryer (EM-702A/B)	Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Header
45	Wastewater Feed Tanks (EF-501/511)	Internal Floating Roof
46	Sludge Dryer (Em-801)	Scrubber (EE-801)
47	Sludge Dryer Conveyor	Dust Collector (EM-802)

7.7.3 Applicability Provisions and Applicable Regulations

- a. An "affected industrial wastewater treatment system" for the purpose of these unit specific conditions is the combination of all the equipment listed in Condition 7.7.2, except the wastewater feed tanks which are subject to 35 IAC 218 Subpart B.
- b. The industrial wastewater treatment plant is subject to 35 IAC 218 Subpart TT. However, the process is not subject to the control requirements of 35 IAC 218.986 because the potential to emit of all affected emission units is less than 25 tons/yr VOM.
- c. An "affected wastewater feed tank" is a tank listed in Condition 7.7.2 that is subject to 35 IAC 218 Subpart B. Due to the low vapor pressure of the material stored, pursuant to 35 IAC 218.119 the requirements of 35 IAC 218.120 and 218.122(b) do not apply.
- d. Although all equipment is subject to 35 IAC 212.321, only the sludge dryer (EM-801) and sludge unloading belt conveyor emit PM and are subject to the requirements of 35 IAC 212.321. (See Condition 5.2.3(d) for the method for determining allowable emissions.)
- e. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission unit, except as provided in Sections 218.302, 218.303, 218.304 of this Part and the following exception: If no odor nuisance exists the limitation of this Subpart shall apply only to photochemically reactive material.

7.7.4 Control Requirements and Production Limits

- a. Total organic carbon to the anaerobic reactor (ER-701) shall not exceed 4,928 ton/yr.
- b. The flare shall be operated to convert a minimum of 95% biogas sent to it to carbon dioxide and water.

The above limitations were established in construction permit 91050060 to assure that the project was constructed as stated in the application [T1].

7.7.5 Emission Limitations

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

The limitations in a through e to follow were established in Construction Permit 91050060, 94070069, 95040038 and 96060010, 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 Permits do not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. [T1]

- a. Emissions from the flare shall not exceed the following limits:

	<u>(lb/hr)</u>	<u>(ton/yr)</u>
Methane	31.9	139.7
Nitrogen Oxides (NO <sub>x</sub> )	1.1	4.8
Carbon Monoxide (CO)	21.0	92.0
Sulfur Dioxide (SO <sub>2</sub> )	19.02	25.0
Volatile Organic Material (VOM)	0.1	0.44

The methane limits are based on flaring all biogas and 95% efficient conversion of methane to carbon dioxide and water. The limits for other pollutants are based on the Permittee's estimate for an inefficient flare. Actual emissions may be much less as the biogas generated by the anaerobic reaction is intended to be a usable fuel gas (methane). The Permittee only plans to flare the biogas if the quality of the gas is not high enough for use as a fuel.

- b. Emission from the biogas dryer shall not exceed the following:

	<u>(lb/hr)</u>	<u>(ton/yr)</u>
Methane	0.5	2.2
NO <sub>x</sub> , CO, VOM (Each)	0.1	0.44

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Emissions of VOM and operation of the groundwater decanter system shall not exceed the following:

<u>Item</u>	<u>Flow Rate (gal/day)</u>	<u>Operation (hrs/yr)</u>	<u>VOM Emissions (lbs/hr) (ton/yr)</u>	
Four Sumps	461,000	8,760	0.3	1.3
Decanter	461,000	8,760	0.14	0.6

Emissions of VOM from the decanter system must not exceed 2.5 tons per calendar year in order to meet the exemption in 35 IAC 218.980 which would otherwise require control pursuant to 35 IAC 218.986(d).

- c. Emissions and operation of the sludge feed tank (EF-105) and sludge dryer (EM-801) vented to a direct contact cooler (EE-801) shall not exceed the following limits:

<u>Item of Equipment</u>	<u>Operating Hours (hr/yr)</u>	<u>VOM Emissions (lb/hr)(ton/yr)</u>	
Feed Tank	8,760	0.2	0.9
Cooler/Scrubber	8,760 <sup>a</sup>	0.5	2.2

<sup>a</sup> The dryer operates at a faster rate than material is sent to the feed (surge) tank and thus should not operate continuously, but is permitted to do so.

- d. Emissions from the wastewater feed tanks shall not exceed the following limits:

<u>Item of Equipment</u>	<u>VOM Emissions (lb/hr) (ton/yr)</u>	
Wastewater Feed Tanks (each)	0.1	0.44

- e. Emissions from the sludge dryer conveyor dust collector (EM-802) shall not exceed the following limits:

<u>Item of Equipment</u>	<u>PM Emissions</u> <u>(lb/hr) (ton/yr)</u>	
Sludge Dryer Conveyor Dust Collector (EM-802)	0.1	0.44

7.7.6 Operating Requirements

None

7.7.7 Monitoring Requirements

The flare shall be equipped with a thermocouple or other device to indicate and record the presence of a pilot flame.

7.7.8 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected wastewater treatment system to demonstrate compliance with conditions in this permit, pursuant to Section 39.5(7)(b) of the Act:

- a. Total organic carbon to the anaerobic reactor, ton/mo.
- b. Amount of biogas produced (ft<sup>3</sup>/mo).
- c. Amount of biogas flared (ft<sup>3</sup>/mo).
- d. Hours of operation of sludge dryer.
- e. Use of supplementary fuel.
- f. Records from flare thermocouple which indicate a pilot flame.

7.7.9 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of an affected wastewater treatment system deviating from the permit requirements of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

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- a. Total organic carbon to the anaerobic reactor exceeds the limit in Condition 7.7.4(a).
- b. Venting of biogas to the flare when the flare is not operational.
- c. In writing notify the Illinois EPA if the biogas normally generated by the system cannot be routinely used as a fuel.

7.7.10 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.7.11 Compliance Procedures

Normal operation assumes compliance with all regulations and the emission limits in Condition 7.7.5 and compliance limits in Condition 7.7.3.

## 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 as of the date the proposed permit for this source was issued. This shield is granted based on the Illinois EPA's review of the permit application for this source and its determination that all applicable requirements are specifically identified in this permit. If the Illinois EPA, in acting on this permit application, has determined that other requirements specifically identified are not applicable to the source, the Illinois EPA's written determination (or a concise summary thereof) is included in this permit.

This permit shield does not extend to applicable requirements which are promulgated after \_\_\_\_\_ **{insert public notice start date}** (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 without applying for or obtaining an amendment to this permit, provided that the changes do not constitute a modification under Title I of the CAA, emissions will not exceed the emissions allowed under this permit following implementation of the physical or operational change and 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 [Section 39.5(12)(a) of the Act]. This notice shall:

- a. Describe the physical or operational change;
- b. Identify the schedule for implementing the physical or operational change;
- c. 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;
- d. Provide emission calculations which demonstrate that the physical or operational change will not result in a modification; and
- e. 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

A report summarizing required monitoring as specified in the conditions of this permit shall be submitted to the Air Compliance Section of the Illinois EPA every six months as follows [Section 39.5(7)(f) of the Act]:

<u>Monitoring Period</u>	<u>Report Due Date</u>
January - June	September 1
July - December	March 1

All instances of deviations from permit requirements must be clearly identified in such reports. All such reports shall be certified in accordance with Condition 9.9.

### 8.6.2 Test Notifications

Unless otherwise specified elsewhere in this permit, a written test plan for any test required by this permit shall be submitted to the Illinois EPA for review at least 30 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 90 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:

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i. Illinois EPA - Air Compliance Section

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

ii. Illinois EPA - Air Regional Field Office

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Eisenhower Tower  
1701 South First Avenue  
Maywood, Illinois 60153

iii. Illinois EPA - Air Permit Section (MC 11)

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Permit Section  
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 ("Title I provisions") and incorporated into this permit pursuant to both Section 39.5 and Title I provisions. Notwithstanding the expiration date on the first page of this permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

9.0 STANDARD PERMIT CONDITIONS

9.1 Effect of Permit

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

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

- a. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section;
- b. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
- c. The applicable requirements of the acid rain program consistent with Section 408(a) of the CAA; and
- d. The ability of USEPA to obtain information from a source pursuant to Section 114 (inspections, monitoring, and entry) of the CAA.

9.2 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 regulated 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)(p)(ii) of the Act]:

- a. Enter upon the Permittee's premises where an actual or potential emission unit is located; where any regulated equipment, operation, or activity is located or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect during hours of operation any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- d. Sample or monitor any substances or parameters at any location:
  - i. At reasonable times, for the purposes of assuring permit compliance; or
  - ii. As otherwise authorized by the CAA, or the Act.
- e. Obtain and remove samples of any discharge or emission of pollutants; 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.

#### 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 regulated or required under this permit. 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 required under this permit shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit [Section 39.5(7)(e)(ii) of the Act].
- b. Other records required by this permit shall be retained for a period of at least 5 years from the date of entry unless a longer period is specified by a particular permit provision.

9.7 Annual Emissions Report

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

9.8 Requirements for Compliance Certification

Pursuant to Section 39.5(7)(p)(v) of the Act, the Permittee shall submit annual compliance certifications. The compliance certifications shall be submitted no later than May 1 or more frequently as specified in the applicable requirements or by permit condition. The compliance certifications shall be submitted to the Air Compliance Section, Air Regional Field Office, and USEPA Region 5 - Air Branch. The addresses for the submittal of the compliance certifications are provided in Condition 8.6.4 of this permit.

- a. The certification shall include the identification of each term or condition of this permit that is the basis of the certification; the compliance status; whether compliance was continuous or intermittent; the method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.
- b. All compliance certifications shall be submitted to USEPA Region 5 in Chicago as well as to the Illinois EPA.

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

#### 9.9 Certification

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

#### 9.10 Defense to Enforcement Actions

##### 9.10.1 Need to Halt or Reduce Activity Not a Defense

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

##### 9.10.2 Emergency Provision

- a. An emergency shall be an affirmative defense to an action brought for noncompliance with the technology-based emission limitations under this permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:
  - i. An emergency occurred as provided in Section 39.5(7)(k) of the Act and the Permittee can identify the cause(s) of the emergency. 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 permanently 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 that inaccurate statements were made in 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].

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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 Permittee is authorized 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)(1), (n), and (o) of the Act].

## 10.0 ATTACHMENTS

### 10.1 Attachment 1 - Requirements for Leaks from Synthetic Organic Chemical Manufacturing Plants (35 IAC 218 Subpart Q)

#### Section 218.421 General Requirements

The owner or operator of a plant which processes more than 3660 mg/yr (4033 tons/year) gaseous and light liquid VOM, and whose components are used to manufacture maleic anhydride or isophthalic acid, shall comply with this Subpart. The provisions of this Subpart are applicable to components containing 10 percent or more by weight VOM as determined by ASTM method E-168, E-169 and E-260, incorporated by reference in Section 218.112 of this Part. Those components that are not process unit components are exempt from this Subpart. A component shall be considered to be leaking if the VOM is equal to, or is greater than 10,000 ppmv as methane or hexane as determined by USEPA Reference Method 21, as specified at 40 CFR 60, Appendix A, incorporated by reference in Section 218.112 of this Part, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed. The provisions of this Subpart are not applicable if the equipment components are used to produce heavy liquid chemicals only from heavy liquid feed or raw materials.

#### Section 218.422 Inspection Program Plan for Leaks

The owner or operator of a synthetic organic chemical or polymer manufacturing plant subject to Section 218.421 of this Part shall prepare an inspection program plan which contains, at a minimum:

- a. An identification of all components and the period in which each will be monitored pursuant to Section 218.423 of this Part;
- b. The format for the monitoring log required by Section 218.425 of this Part;
- c. A description of the monitoring equipment to be used when complying with Section 218.423 of this Part; and
- d. A description of the methods to be used to identify all pipeline valves, pressure relief valves in gaseous service, all leaking components, and components exempted under Section 218.423(j) of this Part such that they are obvious and can be located by both plant personnel

performing monitoring and Illinois EPA personnel  
performing inspections.

Section 218.423 Inspection Program for Leaks

The owner or operator of a synthetic organic chemical or polymer manufacturing plant subject to this Subpart shall, for the purposes of detecting leaks, conduct a component inspection program using the test methods specified in Method 21, 40 CFR 60, Appendix A (1986), incorporated by reference in Section 218.112 of this Part, consistent with the following provisions:

- a. Test annually those components operated near extreme temperature or pressure such that they would be unsafe to routinely monitor and those components which would require the elevation of monitoring personnel higher than two meters above permanent worker access structures or surfaces.
- b. Test quarterly all other pressure relief valves in gas service, pumps in light liquid service, valves in light liquid service and in gas service, and compressors.
- c. If less than or equal to 2 percent of the valves in light liquid service and in gas service tested pursuant to subsection (b) of this Section are found to leak for five consecutive quarters, no leak tests shall be required for three consecutive quarters.
- d. Thereafter, leak tests shall resume for the next quarter. If that test shows less than or equal to 2 percent of the valves in light liquid service and in gas service are leaking, then no tests are required for the next three quarters. If more than 2 percent are leaking, then tests are required for the next five quarters.
- e. Observe visually all pump seals weekly.
- f. Test immediately any pump seal from which liquids are observed dripping.
- g. Test any relief valve within 24 hours after it has vented to the atmosphere.
- h. Routine instrument monitoring of valves which are not externally regulated, flanges, and equipment in heavy

liquid service, is not required. However, any valve which is not externally regulated, flange or piece of equipment in heavy liquid service that is found to be leaking on the basis of sight, smell or sound shall be repaired as soon as practicable but no later than 30 days after the leak is found.

- i. Test immediately after repair any component that was found leaking.
- j. Within one hour of its detection, a weatherproof, readily visible tag, in bright colors such as red or yellow, bearing an identification number and the date on which the leak was detected must be affixed on the leaking component and remain in place until the leaking component is repaired.
- k. The following components are exempt from the monitoring requirements in this Section:
  - i. Any component that is in vacuum service, and
  - ii. Any pressure relief valve that is connected to an operating flare header or vapor recovery device.

#### Section 218.424 Repairing Leaks

All leaking components must be repaired and retested as soon as practicable but no later than 15 days after the leak is found unless the leaking component cannot be repaired until the process unit is shut down. Records of repairing and retesting must be maintained in accordance with Section 218.425 and 218.426 of this Part.

#### Section 218.425 Recordkeeping for Leaks

- a. The owner or operator of a synthetic organic chemical or polymer manufacturing plant shall maintain a leaking components monitoring log which shall contain, at a minimum, the following information:
  - i. The name of the process unit where the component is located:
  - ii. The type of component (e.g., valve, seal);

- iii. The identification number of the component;
  - iv. The date on which a leaking component is discovered;
  - v. The date on which a leaking component is repaired;
  - vi. The date and instrument reading of the recheck procedure after a leaking component is repaired;
  - vii. A record of the calibration of the monitoring instrument;
  - viii. The identification number of leaking components which cannot be repaired until process unit shutdown; and
  - ix. The total number of valves in light liquid service and in gas service inspected; the total number and the percentage of these valves found leaking during the monitoring period.
- b. Copies of the monitoring log shall be retained by the owner or operator for a minimum of two years after the date on which the record was made or the report was prepared.
- c. Copies of the monitoring log shall be made available to the Illinois EPA, upon verbal or written request, prior to or at the time of inspection pursuant to Section 4(d) of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1991, Ch. 111 1/2, pars. 1001 et seq.) [415 ILCS 5/1 et seq.] at any reasonable time.

#### Section 218.426 Report for Leaks

The owner or operator of a synthetic organic chemical or polymer manufacturing plant subject to Section 218.421 through 218.430 of this Part shall:

- a. Submit quarterly reports to the Illinois EPA on or before March 31, June 30, September 30, and December 31 of each year, listing all leaking components identified pursuant to Section 218.423 of this Part but not repaired within 15 days, all leaking components awaiting process unit shutdown, the total number of components inspected, the type of components inspected, and the total number of

components found leaking, the total number of valves in light liquid service and in gas service inspected and the number and percentage of valves in light liquid service and in gas service found leaking.

- b. Submit a signed statement with the report attesting that all monitoring and repairs were performed as required under Section 218.421 through 218.427 of this Part.

#### Section 218.427 Alternative Program for Leaks

The Illinois EPA shall approve an alternative program of monitoring, recordkeeping, or reporting to that prescribed in this Subpart upon a demonstration by the owner or operator of such plant that the alternative program will provide source personnel and Illinois EPA personnel with an equivalent ability to identify and repair leaking components. Any alternative program can be allowed if approved by the Illinois EPA and approved by the USEPA as a SIP revision.

#### Section 218.428 Open-Ended Valves

- a. Each open-ended valve shall be equipped with a cap, blind flange, plug, or a second valve, except during operations requiring fluid flow through the open-ended valve.
- b. Each open-ended valve equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
- c. Components which are open-ended valves and which serve as a sampling connection shall be controlled such that they comply with subsection (c) (1), (c) (2) or (c) (3) below. This requirement does not apply to in-situ sampling systems.
  - i. A closed purge system or closed vent system shall return purged process fluid to the process line with no detectable VOM emissions to the atmosphere;
  - ii. A closed purge system or closed vent system shall collect and recycle purged process fluid to the process line with no detectable VOM emissions to the atmosphere; and

iii. Purged process fluid shall be transported to a control device that complies with the requirements of Section 218.429 of this Part. If a container is used to transport purged process fluid to the control device, the container shall be a closed container designed and used to reduce the VOM emissions vented from purged process fluid after transfer to no detectable VOM emissions as determined by USEPA Reference Method 21, as specified in 40 CFR 60, Appendix A (1990 or 1991) incorporated by reference in Section 218.112 of this Part. For purposes of this Section, the phrase "after transfer" shall refer to the time at which the entire amount of purged process fluid resulting from a flushing or cleaning of the sample line enters the container, provided, however, that purged process fluid may be transferred from the initial container to another closed container prior to disposal, e.g., to a bulk waste storage container.

#### Section 218.429 Standards for Control Devices

Control devices used to comply with Section 218.428(c) of this Part shall comply with the following:

- a. If the control device is a vapor recovery system (for example, condensers and adsorbers), it shall be designed and operated to recover the VOM emissions vented to it with an efficiency of 95 percent or greater.
- b. If the control device is an enclosed combustion device, it shall be designed and operated to reduce the VOM emissions vented to it with an efficiency of 95 percent or greater, or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816°C.
- c. If the control device is a flare, it shall:
  - i. Be designed for and operated with no visible emissions as determined by USEPA Reference Method 22, 40 CFR 60, Appendix A (1986), incorporated by reference in Section 218.112, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
  - ii. Be operated with a pilot flame present at all times and shall be monitored with a thermocouple or any

other equivalent device to detect the presence of the pilot flame.

- iii. Be steam-assisted, air assisted, or nonassisted.
- iv. Be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be calculated using the following equation:

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

Where:

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

$K$  = Constant,  $1.740 \times 10^{-7}$  (1/ppm) (g-mole/scm) (MJ/Kcal) where standard temperature for (g-mole/scm) is 20°C

$C_i$  = Concentration of sample component  $i$ , in ppm, as measured by USEPA Reference Method 18, 40 CFR 60, Appendix A (1986), and ASTM D 2504-83, both incorporated by reference in Section 218.112

$H_i$  = Net heat of combustion of sample component  $i$ , kcal/g mole. The heats of combustion may be determined using ASTM D 2382-83, incorporated by reference in Section 218.112 of this Part, if published values are not available or cannot be calculated.

- v. Steam-assisted and nonassisted flares shall be designed and operated with an exit velocity, as determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by USEPA Reference Method 2 or 2A, 40 CFR

60, Appendix A (1986) incorporated by reference in Section 218.112 of this Part, as appropriate, by the unobstructed (free) cross sectional area of the flare tip, less than 18 m/sec (60 ft/sec).

- vi. Air-assisted flares shall be designed and operated with an exist velocity less than the maximum permitted velocity,  $V_{max}$ , as determined by the following equation:

$$V_{max} = 8.706 + 0.7084 (H_r)$$

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

8.706 = Constant

0.7084 = Constant

$H_r$  = The net heating value as determined in subsection (c) (4) of this Section.

- d. The following information pertaining to closed vent systems and control devices subject to Section 218.429 shall be maintained by the owner or operator. These records shall be updated as necessary to describe current operation and equipment. The records shall be retained at a readily accessible location at the source for a minimum of two years after the control device is permanently shutdown.
  - i. Detailed schematics, design specifications, and piping and instrumentation diagrams;
  - ii. The dates and description of any changes in design specifications;
  - iii. A description of the parameter or parameters monitored and recorded as required in subsection (f)(1) to ensure that the control devices are operated and maintained in conformance with their design and an explanation why that parameter (or parameters) was selected for monitoring.
- e. The control device shall be operated at all times when emissions may be vented to it.

- f. Owners and operators of control devices used to comply with this Subpart shall monitor each control device to ensure that the control device is operated and maintained in conformance with its designs at all times that emissions may be vented to it. This monitoring shall be conducted in accordance with Section 218.429(d)(3). The records prepared as part of this monitoring activity shall include the dates of startup and shutdown of control devices and identify periods when the devices are not operated as designed, including periods when a flare pilot light does not have a flame.
- g. The requirements of subsections (d), (e) and (f) shall not apply to a combustion device located at the source used for disposal of purged process fluid which is subject to the Burning of Hazardous Waste in Boilers and Industrials Furnaces (BIF) rules, 40 CFR Parts 260, 261, 264, 265, 266, and 270, or which is subject to the Resource Conservation and Recovery Act (RCRA) rules, 35 Ill. Adm. Code Parts 703, 720, 721, 724, 725, and 726. The owner or operator of such combustion device shall satisfy applicable provisions of the RCRA or BIF rules.

Section 218.431 Applicability

- a. The provisions of Sections 218.431 through 218.436 of this Subpart shall apply to:
  - i. Every owner or operator of any chemical manufacturing process unit that manufactures, as a primary product, one or more of the chemicals listed in Appendix A of this Part and that chemical manufacturing process unit causes or allows any reactor or distillation unit, either individually or in tandem, to discharge one or more process vent streams either directly to the atmosphere or to a recovery system; and
  - ii. All continuous distillation and reactor process emission units not subject to Section 218.520 through 218.527 of this Part, and located within Stepan Company's Millsdale manufacturing facility, Elwood, Illinois.
- b. Notwithstanding subsection (a) of this Section, the control requirements set forth within Section 218.432 of this Subpart shall not apply to the following:

- i. Any process vent stream with a total resource effectiveness (TRE) index value greater than 1.0. However, such process vent stream remains subject to the performance testing requirements contained in Section 218.433 of this Subpart and the reporting and recordkeeping requirements contained in Section 218.435 of this Subpart;
- ii. Any reactor or distillation unit that is designed and operated as a batch operation;
- iii. Any reactor or distillation unit that is part of a polymer manufacturing operation;
- iv. Any reactor or distillation unit that is part of the chemical manufacturing process unit with a total design capacity of less than 1 gigagram (1,100 tons) per year for all chemicals produced, as a primary product, within that process unit. However, such operations remain subject to the reporting and recordkeeping requirements contained in Section 218.435(d) of this Subpart;
- v. Any vent stream with a flow rate less than 0.0085 scm/min or a total VOM concentration of less than 500 ppmv, less methane and ethane, as measured by Method 18, or a concentration of VOM of less than 250 ppmv as measured by Method 25A. However, such operations remain subject to the performance testing requirement listed in Section 218.433 of this Subpart, as well as the reporting and recordkeeping requirements contained in Section 218.435 of this Subpart; or
- vi. Any reactor or distillation unit included within an Early Reduction Program, as specified in 40 CFR 63, and published in 57 Fed. Reg. 61970 (October 22, 1993), evidenced by a timely enforceable commitment approved by USEPA.

Section 218.432 Control Requirements

- a. Every owner or operator of a source subject to the requirements of this Subpart, as determined by Section 218.431 of this Subpart, shall either:

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- i. Reduce emissions of VOM, less methane or ethane, by 98 weight-percent, or to 20 ppmv, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent;
  - ii. If a boiler or process heater is used to comply with this Subpart, the vent stream shall be introduced into the flame zone of the boiler or process heater; or
  - iii. If a flare is used to comply with this Subpart it shall comply with the requirements of 40 CFR 60.18, incorporated by reference at Section 218.112 of this Part. The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to this Subpart, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to this Subpart to not comply with one or more of the provisions of 40 CFR 60.18.
- b. Notwithstanding subsection (a) or (c) of this Section, and subject to subsection (b)(2) of this Section:
- i. No owner or operator of a source subject to Section 218.432 of this Subpart shall cause or allow VOM to be emitted through an existing control device unless the control device is operated to achieve:
    - A. 90 percent control of the VOM emissions vented to it; or
    - B. VOM emissions concentration of less than 50 ppmv, on a dry basis.
  - ii. Any existing control device subject to subsection (a) of this Section is required to meet the 98 percent emissions limit set forth in subsection (a)(1) upon the earlier to occur of the date the control device is replaced for any reason, including, but not limited to, normal maintenance, malfunction, accident, and obsolescence, or December 31, 1999. A control device is considered to be replaced when:
    - A. All of the device is replaced; or
    - B. When the cost to repair the device or the cost to replace part of the device exceeds 50

percent of the cost of replacing the entire device with a device that complies with the 98% emissions limitation in subsection (a)(1) of this Section.

- c. 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.

#### Section 218.433 Performance and Testing Requirements

- a. For the purpose of demonstrating compliance with the TRE index value in Section 218.432(c) of this Subpart, an engineering assessment shall be made to determine process vent stream flow rate, net heating value, and VOM emission rate for the representative operating conditions expected to yield the lowest TRE index value. The source shall also calculate the TRE index values pursuant to the equations contained within Appendix G (b)(1) of this Part.
  - i. If the TRE index value calculated using such engineering assessment and the TRE equation in Appendix G (b)(1) of this Part is greater than 4.0, then the owner or operator is exempt from performing the measurements specified in Appendix G (a) of this Part.
  - ii. If the TRE index value calculated using such engineering assessment and the TRE equation in Appendix G (b)(1) of this Part is less than or equal to 4.0, then the owner or operator shall perform the measurements specified in Appendix G (a) of this Part. An owner or operator of a source may, in the alternative, elect to comply with the control requirements specified in Section 218.432 of this Subpart rather than performing the measurements in Appendix G (a) of this Part.
  - iii. An engineering assessment shall include, but is not limited to, the following:

- A. Previous test results, provided the tests are representative of current operating practices at the chemical manufacturing process unit;
  - B. Bench-scale or pilot-scale test data of the process under representative operating conditions;
  - C. Maximum flow rate, as stated within a permit limit, applicable to the process vent;
  - D. Design analysis based on accepted chemical engineering principles, measurable process parameters, or physical or chemical laws or properties. Examples of analytical methods include, but are not limited to, the following:
    - 1. Use of material balances based on process stoichiometry to estimate maximum VOM concentrations;
    - 2. Estimation of maximum flow rate based on physical equipment design such as pump or blower capacities;
    - 3. Estimation of VOM concentrations based on saturation conditions; and
    - 4. Estimation of maximum expected net heating value based on the stream concentration of each organic compound, or, alternatively, as if all VOM in the stream were the compound with the highest heating value.
  - E. All data, assumptions, and procedures used in the engineering assessment shall be documented.
- b. For the purpose of demonstrating compliance with the control requirements in Section 218.432 of this Subpart, the chemical manufacturing process unit shall be run at representative operating conditions and flow rates during any performance test.

- c. The following methods in 40 CFR 60, incorporated by reference at Section 218.112 of this Part, shall be used to demonstrate compliance with the reduction efficiency requirement listed in Section 218.432(a)(1) of this Subpart.
- i. Method 1 or 1A, incorporated by reference at Section 218.112 of this Part, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or VOM content, less methane and ethane, reduction efficiency shall be located after the last recovery device but prior to the inlet of the control device, prior to any dilution of the process vent stream, and prior to release to the atmosphere.
  - ii. Method 2, 2A, 2C, or 2D, incorporated by reference at Section 218.112 of this Part, as appropriate, for determination of gas stream volumetric flow rate.
  - iii. The emission rate correction factor, integrated sampling, and analysis procedure of Method 3, incorporated by reference at Section 218.112 of this Part, shall be used to determine the oxygen concentration ( $\% O_{2d}$ ) for the purpose of determining compliance with the 20 ppmv limitation. The sampling site for determining compliance with the 20 ppmv limitation shall be the same site used for the VOM samples, and samples shall be taken at the same time that the VOM samples are taken. The VOM concentration corrected to 3 percent oxygen ( $C_c$ ) shall be computed using the following formula:

$$C_c = C_{VOM} \times \frac{17.9}{20.9 - \% O_{2d}}$$

Where:

$C_c$  = Concentration of VOM (minus methane and ethane) corrected to 3 percent  $O_2$ , dry basis, ppmv.

$C_{VOM}$  = Concentration of VOM (minus methane and ethane), dry basis, ppmv.

% O<sub>2d</sub> = Concentration of oxygen, dry basis,  
percent by volume.

iv. Method 18, incorporated by reference at Section 218.112 of this Part, to determine the concentration of VOM, less methane and ethane, at the outlet of the control device when determining compliance with the 20 ppmv limitation in Section 218.432(a)(1) of this Subpart, or at both the control device inlet and outlet when the reduction efficiency of the control device is to be determined.

A. The minimum sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used then the samples shall be taken at 15-minute intervals.

B. The emission reduction (R) of VOM, less methane and ethane, shall be determined using the following formula:

$$R = \frac{(E_i - E_o) \times 100}{E_i}$$

Where:

R = Emission reduction, percent by weight.

E<sub>i</sub> = Mass rate of VOM (minus methane and ethane) entering the control device, kg VOM/hr.

E<sub>o</sub> = Mass rate of VOM, less methane and ethane discharged to the atmosphere, kg VOM/hr.

C. The mass rates of VOM (E<sub>i</sub>, E<sub>o</sub>) shall be computed using the following formula:

$$E_i = K_2 \left( \sum_{j=1}^n C_{ij} M_{ij} \right) Q$$

$$E_o = K_2 \left( \sum_{j=1}^n C_{oj} M_{oj} \right) Q_o$$

Where:

$C_{ij}, C_{oj}$  = Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppmv.

$M_{ij}, M_{oj}$  = Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, grams per gram-mole.

$Q_i, Q_o$  = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dry scm/min.

$K_2$  =  $2.494 \times 10^{-5}$  (liters per minute) (gram-mole per scm) (kg/g) (min/hr), where standard temperature for (gram-mole per scm) is 20°C.

D. The representative VOM concentration ( $C_{vom}$ ) is the sum of each of the individual components of VOM ( $C_j$ ) and shall be computed for each run using the following:

$$C_{VOM} = \sum_{j=1}^n C_j$$

Where:

$C_{vom}$  = Concentration of VOM (minus methane and ethane), dry basis, ppmv.

$C_j$  = Concentration of sample component "j", dry basis, ppmv.

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N = Number of components in the sample.

- v. When a boiler or process heater with a design heat input capacity of 44 megawatts or greater, or a boiler or process heater into which the process vent stream is introduced with the primary fuel, is used to comply with the control requirements, an initial performance test is not required.
  
- d. When a flare is used to comply with the control requirements of this rule, the flare shall comply with the requirements of 40 CFR 60.18, incorporated by reference at Section 218.112 of this Part.

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10.2 Attachment 2 - 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: \_\_\_\_\_

DGP:jar

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 BP Amoco Chemical Company is located at 23425 Amoco Road in Channahon Township, southwest of Joliet, Illinois. The source manufactures three major organic chemicals. In addition, the plant generates its heat using gas boilers and also has cooling towers, and a wastewater treatment plant.

II. EMISSION UNITS

Significant emission units at this source are as follows:

Emission Unit	Description	Date Constructed	Emission Control Equipment
01	Reactors (NR-200A & B) Vented to Condensers (NE-300, 301A/B and 302 Vented to Scrubber (NT-400) to Control	1974	Catalytic Oxidizer, NB-400
02	O-Xylene Splitter Tower (NT-600) and Vent Header (ND-1500)	1974	ND-1500 Vent Scrubber
03	Brule Residue (Liquid Waste) Incinerator NB-800	1975	None
04	Product Loading Operations	1974	None
05	Reactor (HR-301) Vented to High Pressure Absorber (HT-307)	1997	Catalytic Oxidizer, HR-1306 Followed by Bromine Scrubber, HT-1307
06	Product Drying Section	1997	Low Pressure Absorber (PD-700)
07	Vent Header Dehydration and Light End Recovery Section and Associated Pieces of Equipment	1997	Atmospheric Absorber (HT-501)
08	Crystallization Process	1997	Third Crystallizer Condenser (HE-423)
09	Meta-Xylene Storage Tanks (CF-1608 and 1614)	1973	Internal Floating Roofs
10	Acetic Acid Storage Tank (HF-1404)		Overhead Condenser (HE-1404)
11	IPA Residue (Solid Waste) Incinerator (HB-2301)	1986	Baghouses (HM-2301A through F)

Emission Unit	Description	Date Constructed	Emission Control Equipment
12	Product Day Tanks (KF-110 and KF-111)		Dust Collectors (KM-110(2) and KM-111(2))
13	Incinerator Bottoms Receiver (HF-2302)	1986	None
14	First Crystallizer (HD-421) with Overhead Condensers		Overhead Condenser (HE-411)
15	IPA Gas-Fired Hot Oil Furnace (HB-2200) with Firing Rate of 6.0 mmBtu/hr	1980	None
16	Feed Silo LF-111	1964	Dust Collector LM-112
17	Reactor (LR-101) and Crystallizers (LD-201, 202 and 203) and Feed Slurry Tank (LD-101)	1990	Vent Scrubber LM-305
18	Four Centrifuges (lb-311A, B, C, and D)	1996	Venturi Scrubber LM-313
19	Dryer (LM-312)	1996	Venturi Scrubber LM-314
20	Day Tanks (HF-1210 and 1211)	1964	Dust Collectors (HM-1210(2) and 1211(2))
21	Hot Oil Furnace (LB-501), Gas-Fired, 18.3 mmBtu/hr	1964	None
22	Reaction Section (Three Batch Reactors, MR-301, 302, 303) to High Pressure Absorber (MT-304) to Oxidizer	1967	Regenerative Thermal Oxidizer (MB-1050)
23	Feed Preparation Crystallizer (MD-403) and Crystallizer Filter to Low Pressure Absorber (MT-802) to Oxidizer	1967	Regenerative Thermal Oxidizer (MB-1050)
24	Dehydration/Distillation (MD-403, -404, -603, and -754)	1967	Fume Scrubber (MD-705)
25	Dehydration/Distillation (MD-602 and MD-753 through MD-652)		Barometric Condenser (MD-766A/B)
26	Flaker (MM-748)	1967	Dust Collector MM-749
27	Bagging	1967	Dust Collectors (MM-602/603)
28	TMA Residue Incinerator (MB-1002)	1967	Baghouse (MM-1010, 1011, 1012)
29	Psuedocumene Storage Tanks (CF-1609, 1612, 1613)	1970	None
30	Acetic Acid Storage Tank (MF-1101)	1967	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
31	Hot Oil Furnace (MB-1025), Gas-Fired, 45.8 mmBtu/hour	1997	None
32	Gas-Fired Boiler CB-703	Pre-1972	None
33	Gas-Fired Boiler CB-704	Pre-1972	None
34	Gas-Fired Boiler CB-706	1998	Low NO <sub>x</sub> Burners
35	Cooling Towers (CU-401, 402, 403)	Pre-1972	None
36	Three PIA Silos DF-100, DF-200, F-707	Pre-1973	Dust Collectors DM-112, DM-200, M-718
37	Three PIA Packaging Processes DF-100, DF-200, F-707	Pre-1973	Dust Collectors DM-100, DM-213, M-708
38	Four Terephthalic Acid (TA) Silos BF-406, 407, 410, F-706	1957	Dust Collectors BM-406, BM-407, BM-410, M-706
39	TA Packaging Operation (Bags or Bulk)	Pre-1973	Dust Collector BM-701
40	PIA Warehouse Vacuum System		Dust Collector DM-105
41	TMA Warehouse Vacuum System		Dust Collector MM-604A/B
42	The following low emission units open or vented to atmosphere: Aeration Basins, Clarifier, Groundwater Decanter System, Sludge Drying Pond	1964	None
43	Anaerobic Reactor (ER-701)	1991	Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Header
44	Biogas Dryer (EM-702A/B)		Biogas to Flare (EM-705) or Backup Flare (EM-703) or Fuel Gas Heater
45	Wastewater Feed Tanks (EF-501/511)	1991	Internal Floating Roof
46	Sludge Dryer (EM-801)	1995	Scrubber (EE-801)
47	Sludge Dryer Conveyor	1995	Dust Collector (EM-802)

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)	674.1
Sulfur Dioxide (SO <sub>2</sub> )	27.1
Particulate Matter (PM)	193.3
Nitrogen Oxides (NO <sub>x</sub> )	1199.3
HAP, not included in VOM or PM	---
TOTAL	2093.8

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 non-attainment area and emits volatile organic material (VOM), the permit includes conditions to implement the Emissions Reduction Market System (ERMS). The ERMS is a market-based program designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as further described in Section 6.0 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 allotment 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 emissions 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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