Screening Study To Determine Need For Standards Of Performance For New Sources Of Dimethyl Terephthalate And Terephthalic Acid Manufacturing

Final Report

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SCREENING STUDY TO DETERMINE
NEED FOR STANDARDS OF
PERFORMANCE FOR NEW SOURCES OF
DIMETHYL TEREPHTHALATE AND
TEREPHTHALIC ACID MANUFACTURING

FINAL REPORT

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ABSTRACT

This document examines the impact of NSPS on hydrocarbon and carbon monoxide emissions from the dimethyl terephthalate-terephthalic acid (DMT-TPA) industry. The impact of NSPS is calculated using a model developed by the Research Corporation of New England.

The best systems of emission control are determined and the effect of using these systems on all significant emission points from each DMT-TPA plant is calculated.

A listing of up-to-date emission information for each DMT-TPA plant is presented in the appendices.

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SECTION I

THE DMT-TPA INDUSTRY

INTRODUCTION

Dimethylterephthalate (DMT) and terephthalic acid (TPA) are, together with ethylene glycol, the principal raw materials for the manufacture of polyester fibers and films. Other uses consume less than I percent of all DMT-TPA production. In 1973, 93 percent of the DMT-TPA produced was used in polyester fibers and the bulk of the remainder in films.

DMT-TPA manufacture is an important process, ranking 21st among the 50 biggest volume producers of chemicals in the U.S. In 1975, 4.65 billion pounds of DMT-TPA were manufactured. Almost all the DMT-TPA manufactured is used domestically. 2

English units are used throughout this report. Table I-l is a list of conversion factors that can be used to change the units in this report to metric units.

Table I-1. TABLE OF CONVERSION FACTORS FOR CONVERT-ING ENGLISH TO METRIC UNITS

Multiply	Ву	To obtain
Pounds	0.454	Kilograms
Tons (short)	0.907	Tons (metric)
Pounds/hour o _F	0.007559 5/9 (^o F-32)	Kilograms/second

MANUFACTURING

All of the DMT and TPA manufactured in the U.S. is produced from p-xylene feedstock. The p-xylene is air oxidized to form the acid or air oxidized and esterified to form the ester. The reaction is a liquid phase oxidation in which air, the oxidant, is blown through a solution of p-xylene and catalysts to form TPA. The TPA is esterified, usually with methanol, to form the ester, DMT. A simplified chemical reaction sequence is:

$$\begin{array}{c|c} \text{CH}_3 & \text{cooch}_3 \\ \hline \text{Oxidation} & \text{esterification} \\ \hline \text{CH}_3 & \text{cooch}_3 \\ \hline \text{D-xylene} & \text{TPA} & \text{methanol} \\ \end{array}$$

p-xylene is a liquid at room temperature. TPA and DMT are white solids at room temperature. The substitution of the -OH group on TPA by $-OCH_3$ groups to form the DMT ester is referred to as esterification.

TPA is insoluble in water and most organic solvents at room temperature whereas DMT is soluble in ether and hot methyl alcohol. TPA does not melt but sublimes at 572°F. DMT melts at 286°F and boils at 550°F. Because of these properties, TPA is usually purified by successive crystallizations whereas DMT is purified by repeated distillations. More thorough descriptions of each DMT-TPA manufacturing process are given in Section II and in References 1 and 3.

In the past, nitric acid was used to oxidize p-xylene. However, with the closing of DuPont's Old Hickory Works in Old Hickory, Tennessee in 1974, no manufacturer uses nitric acid to oxidize p-xylene. Therefore, there are no NO_x emission sources in the manufacture of DMT-TPA.

The polyester - polyethylene terephthalate (PET) - can be produced from either DMT or TPA. The preferred route is the direct esterification of TPA, as opposed to the transesterification of DMT. That is, the PET monomer is produced by:

Prior to 1963, polyethylene terephthalate was produced primarily from DMT. Since then, however, an increasingly larger proportion has been produced from purified terephalic acid (PTA). Future expansion of DMT-TPA is expected to be predominantly in PTA production.

There are presently five companies in the U.S. producing DMT-TPA at six plants. Table I-2 lists these facilities, their location, their production capacity and a brief production history.

Table I-2. DMT-TPA PLANTS AND PRODUCTION CAPACITIES

				Capacity,	10 ⁶ lb/yr ^c		
Producer	Location	Process	April 1971	Jan. 1974	July 1974a	May 1976b	Comments
Hoechst Fibers Corporation	Spartenburg, South Carolina	p-xylene oxidation - lenses technology from Hercules	(100)	(150)	(160)		
Amoco Chemicals Corporation	Joliet, Illinois	p-xylene oxidation, Amoco process	150	220	150 (100)	133	DMT production to be halted in 1976
	Decatur, Alabama	·	(500)	(900)	200 (800)	1630 (240)	
	Cooper River, South Carolina						Plant is planned for construction - should be completed in 1978 with 1000 x 10 ⁶ pound per year capacity.
E. I. DuPont de Nemours	Phoenix, North Carolina	DuPont lenses its DMT technology from Ten- nessee Eastman and its TPA technology from Amoco	-	(450)	(750)		
	Old Hickory, Tennessee		(250)	(250)	(300)	-	Plant closed November 1974. A 500×10^6 lb/yr plant should be reopening in late 1976.
•	Gibbstown, New Jersey		(250)	(300)	-	-	Closed in 1974.
Tennessee Eastman	Kingsport, Tennessee	Tennessee Eastman process	(300)	(350)	(400)	(600)	
	Columbia, Scuth Carolina	, .					Estimated at 522 million pounds per year - see Section II.
Hercules	Burlington, New Jersey	Hercules/Imhaussen Witten process	(100)	(150)	-	-	Closed in November 1974.
	Wilmington, North Carolina		(450)	(850)	(1300)	(1300)	
	Eastover, South Carolina						An 800 x 10 ⁶ lb/yr plant is planned, but is not yet under construction.
Mobil Chemical Company	Beaumont, Texas	-	150		-		Mobil closed its DMT-TPA plant in 1973 and sold the facility to Bellsicol Chemical. Bellsicol does not manufacture DMT-TPA (see Appendix A).

^aTotal production is DMT; equivalents = 4216 million pounds per year. From Reference 1.

 $^{^{\}rm b}$ Total production in DMT; equivalents = 5095 million pounds per year. From this study.

c) = DMT

The consumption patterns of DMT and TPA, presented in Table I-3, show that almost all DMT-TPA produced is consumed in the production of polyethylene terepthalate - about 93 percent for polyester fibers and about 7 percent for polyester films. Less than 1 percent is used for polybutylene terephthalate resins and miscellaneous uses. Polyester fibers are used primarily in textiles (80 percent), especially apparel made of polyester double knits (63 percent). They are also used in tire cord and for other industrial uses. 1

INDUSTRIAL TRENDS

Growth of DMT-TPA manufacturing has been tied directly to the growth of polyester since almost 100 percent of their production is consumed for the production of polyester. The remarkable growth of DMT-TPA consumption during the 1960s was due to the rapid penetration of most major textile markets by polyester fibers. The attractiveness of easy-care, durable press polyester apparel led to the general acceptance of polyester as an apparel fiber, so that, by 1973 the polyester portion of the textile fibers market was 30 to 35 percent, up from less than 5 percent in 1963. Even when a general slowing of growth in the apparel staple market occurred in the late sixties, polyester fibers continued to grow because of the success of double-knit fabrics. Sustained but slower growth of polyester fibers in woven blend fabrics and for tire cord, in addition to the popularity of double knits, resulted in an overall annual average growth rate of about 22 percent for polyester fibers, and for DMT-TPA consumption, from 1967 to 1973. 1

During 1974 and 1975, the growth of polyester slackened. Several DMT and TPA plants were shut down in 1974 - some permanently, some for replacement of units or additional capacity. The shutdowns coincided with raw material shortages, energy price increases, and a depressed economy which had decelerated the growth of Polyester. 4,5,6 Production

Table 1-3. DIMETHYL TEREPHTHALATE AND TEREPHTHALIC ACID STATUS - 1973 (MILLIONS OF POUNDS)

		
Production - 1973		
DMT	2,714	
Fiber-Grade TPA	900	
Total (in DMT equivalents)		3,767 ^a
Domestic consumption (in DMT equivalents) - 1973		
In polyester fibers ^b	3,206	
In polyester films ^c	218	
In other uses	21	
Total		3,445
Exports - 1973 ^d	168	·

^aPounds of TPA were multiplied by 1.17 to convert to DMT equivalents.

Source: Data in this table are taken from the PRO-DUCING COMPANIES, PRODUCTION, CONSUMPTION, and INTERNATIONAL sections, ChemEcon Handbook, May 1975.

^bPounds of polyester fiber produced were multiplied by a factor of 1.11 to obtain DMT equivalents.

 $^{^{\}mathrm{c}}$ Pounds of polyester film produced were multiplied by a factor of 1.12 to obtain DMT equivalents.

dReported DMT exports only.

remained below capacity in 1975 and, in fact, was almost unchanged worldwide from 1974 to 1975.

In 1976, however, both demand and production capacity increased. At the beginning of the year, a substantial inventory of benzene assured that the raw materials for DMT and TPA production would be adequate. The demand for polyester fiber is again increasing, the only fiber to be experiencing increased demand after the fiber market decline of 1974. The increased production capacity, much of which was started in 1974, is scheduled to come on line in 1976. This will result in an increase in production capacity of 84 percent for DMT-TPA over 1975. TPA output alone could jump 50 percent this year. Thus polyester, DMT, and TPA will experience a substantial comeback in 1976. However, growth in production is expected to show smaller gains in 1977 and 1978.

Studying the planned growth of the man-made fiber industry in the world from 1976 to 1980 shows that Western Europe is expanding by 37 percent with Italy scheduling a 65 percent increase; Korea is expanding by 19 percent; Taiwan by 32 percent and the U.S. by 20 percent. Only Japan (zero percent) and France (10 percent) have modest expansion plans. The U.S. and France have planned their fiber expansion for supplying home markets. By 1980, fiber production in excess of domestic consumption is predicted to be 35 percent in Western Europe, 23 percent in Japan, 33 percent in Korea, 56 percent in Taiwan but only 7 percent in the U.S. Thus, competition will be fierce and it is unlikely that the U.S. will be able to export substantial amounts of fibers, including polyester, despite their cost advantages. However, imports of polyester fabrics and fibers could become important.

Production of DMT and TPA depends on adequate supplies of their precursor - p-xylene - and adequate supplies of their coreactant for polyester production - ethylene glycol. Neither chemical is seen to be a limiting

Eactor for future DMT-TPA production rates. 10 Paraxylene production increases are presently underway. Polyesters will be the major outlet for ethylene glycol in the future.

Growth of DMT-TPA production in the U.S. will follow the demand for polyester which is expected to continue to increase, though not as fast as the previous annual growth rate of 22 percent per year. Exports of DMT, TPA and polyester amounted to only about 7 percent of the DMT-TPA produced in the U.S. in 1973 and will probably continue to be minimal in the future due to surpluses on the international market.

GROWTH PROJECTIONS

Historically, the growth of DMT and TPA production has been quite rapid. The combine annual growth rate over the period 1967 to 1973 was around 23 percent, with production increasing from 1,087 to 3,767 million pounds (in DMT equivalents). For DMT production, the annual growth rate was 19.4 percent (937 to 2,714 million pounds), while for TPA, the annual growth rate was higher - 36.5 percent. The magnitude of the growth was lower, however, from 139 to 900 million pounds. From 1973 to 1974, consumption fell 1.5 percent, from 3,400 to 3,350 million pounds.

Projections of future growth of DMT and TPA vary considerably and are strongly influenced by many variables. The projections are summarized in Table I 4 with the time period for which they are applicable. Projections for annual growth rates range from 7.1 to 14.9 percent for DMT-TPA production. The latest growth projection of an annual growth rate of 10 to 12 percent would appear to be the most valid. Producers are not yet back to full capacity production. Conversations with plant managers substantiated the projection of an annual growth rate of 10 to 12 percent

^{*}In 1973, combined production was approximately 3,767 million pounds, whereas combined consumption was approximately 3,400 million pounds.

growth over the next several years. It appears that a softness in the polyester market and not p-xylene availability will be the limiting factor in DMT-TPA growth. 11

Table I-4. GROWTH PROJECTIONS FOR DMT AND TPA PRODUCTION

Time period	Estimated annual change, percent	Estimated production capacity change, 10 ⁶ lbs/year	Source	Projected capacity in 1985, 10 ⁶ lbs/year
DMT-TPA	·			
1967-1973	23.	1087 to 3767	Ref. 1	-
1973-1978	14.9	3000 to 6000	Ref. 12	15,863
1973-1979	8.2	3445 to 5522	Ref. 1	8,861
1975-1980	7.1	3400 to 4800	Ref. 13	6,764
1974-1985	10.0 to 12.0	3400 to 9700	Ref. 10	9,700
DMT	:			·
1967-1973	19.4	937 to 2714	Ref. 1	. -
1973-1976	9.8	2690 to 3560	Ref. 4	8,258
1972-1980	4.4	1765 to 2500	Ref. 14	3,100
TPA				
1967-1973	36.5	139 to 900	Ref. 1	-
1973-1976	18.6	900 to 1500	Ref. 4	6,964
1972-1980	19.4	700 to 2900	Ref. 14	7,038

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SECTION II

SOURCES AND TYPE OF EMISSIONS

INTRODUCTION

Only processes involving the air oxidation of p-xylene are used in the United States to produce DMT-TPA. In the past, nitric acid oxidation of p-xylene was used, but this practice ended with the closing of DuPont's Old Hickory Works Plant. Therefore, there are no emissions of nitrogen oxides from the production of DMT-TPA.

PROCESSES USED FOR THE MANUFACTURE OF DMT-TPA

Presently, there are three technologies used in the United States for the production of DMT-TPA. These are: the Hercules-Witten Process for the production of DMT; the Amoco Process for the production of TPA, and the Eastman Process for the production of DMT. Table II-1 lists the technology used by each manufacturer.

The major gaseous emissions form the production of DMT-TPA are organic and CO emissions from the p-xylene air oxidation step and the methanol recovery step. Particulate emissions from the drying, crushing, and packaging operations may also be large.

A brief discussion of each process and its associated major air emissions is provided in the following text. More complete descriptions of each process, including emissions from all emission points are given

Table II-1. TECHNOLOGIES USED BY PRODUCERS OF DMT-TPA

Producer	Location	Product	Technology	Comment
Amoco Chemicals Corporation	Joliet, Illinois	TPA	Amoco Process	DMT production halted in 1976
	Decatur, Alabama	TPA	Amoco Process	DMT production halted in 1976
	Cooper River, South Carolina	TPA	Amoco Process	Under construction
E. I. DuPont de Nemours	Phoenix, North Carolina	TPA DMT	Amoco Process Eastman Process	
	Old Hickory, Tennessee	TPA DMT	Amoco Process Eastman Process	Scheduled for reopening in 1976
Eastman Company	Kingsport, Tennessee	DMT	Eastman Process	
	Columbia, South Carolina	DMT	Eastman Process	Under construction
Hercules, Incorporated	Wilmington, North Carolina	DMT	Hercules-Witten Process	
	Eastover, South Carolina	DMT	Hercules-Witten Process	Planned for construction
Hoechst Fibers Corporation	Spartanburg, South Carolina	DMT	Hercules-Witten Process	

in Appendix A and in Reference 1. Emissions will be considered to be small if they are: (1) 10 pounds per hour or less for hydrocarbons; (2) 20 pounds per hour or less for CO; and (3) 1 pound per hour or less for particulate. These limits are arbitrary. The rationale for choosing these limits is twofold. First, the best systems of emission control are at least 95 percent efficient (see Section IV). Therefore, emissions that are less than 5 percent of the magnitude from the largest emission source at each plant (e.g., from the p-xylene oxidizer) will be considered small emission sources. The above limits account for emissions that are less than 5 percent of the magnitude of the emissions from the largest source at each plant. Second, at each DMT-TPA plant there are many stacks with emission rates below the above limits, and, because of their number, emission control devices on each stack would not be practical.

The information presented in the following text was obtained from one or more of the following sources:

- Plant visits and discussions with operating personnel;
- Permit applications on file with the various state air pollution control agencies;
- Updates of the questionnaires used by the Houdry Division of Air Products, Inc., and completed by most DMT-TPA manufacturers in 1972.

AMOCO CHEMICALS CORPORATION

Amoco has two DMT-TPA plants — one in Joliet, Illinois, and one in Decatur, Alabama. Both plants produce purified terephthalic acid (PTA) by first manufacturing a crude TPA intermediate. There is some production of DMT, but after 1976 production will be limited to PTA. The Amoco Process is used extensively for the production of fiber grade PTA.

Technology

The production of TPA is essentially a one-step process represented by:

$$CH_3$$
 CH_3
 CH_3
 $COOH$
 $COOH$
 $COOH$
 $COOH$
 $COOH$
 $COOH$
 $COOH$
 $COOH$
 $COOH$

In the production of crude terephthalic acid, p-xylene is diluted with glacial acetic acid, catalysts are added, and the mixture is air oxidized.

Purified terephthalic acid is crystallized from a slurry of TPA, water and other reactants. DMT is prepared in a separate step by esterifying the TPA with methanol. $^{\rm l}$

Emissions From the Joliet Plant

Flow diagrams for the TPA and PTA process at Amoco's Joliet Plant are given in Figures II-1 and II-2. A flow diagram of the DMT process is given in Figure II-3. The Joliet Plant has a production capacity of 133 million pounds of crude TPA per year. The DMT operation should be phased out by the end of this year.

The sources of greatest emissions from the TPA, PTA and DMT processes are listed in Table II-2. This information was obtained during a site visit to the Joliet Plant. The emission information was taken from state permit applications on file at the Joliet Plant and should represent the most up-to-date information available.

In Figure II-1 the absorber on the reactor is a tray type absorber tower. The vent header absorber is an atmospheric pressure spray tower. All other scrubbers shown in Figure II-2 and II-3 are atmospheric pressure spray towers. Further descriptions of the emission control equipment are given in Appendix A and Reference 1.

As can be seen from Table II-2, the major emissions form the Joliet DMT-TPA plant are particulates and hydrocarbons with some CO from the p-xylene oxidation step. The particulate is either TPA or DMT. The hydrocarbon emissions from the TPA and PTA units are composed of acetic acid with some methyl acetate. The source of greatest hydrocarbon emissions, the dehydration tower, has a flow rate of 148 pounds per hour of acetic acid. The major source of emissions for the DMT unit is the liquid drum, with a flow of 500 pounds per hour of dimethyl ether and 20 pounds per hour of methanol.

Emissions From the Decatur Plant

Information contained in this section was supplied by personnel at the Decatur Plant. It is the most up-to-date information available. Complete emission information for all emission points is given in Appendix A.

The Decatur Plant employs four parallel production lines to make TPA and PTA, and two parallel production lines for the production of DMT from TPA. The capacity of each production line is:

- #1 oxidation unit 280 million pounds TPA per year
- #2 oxidation unit 280 million pounds TPA per year
- #3 oxidation unit 530 million pounds TPA per year
- #4 oxidation unit 540 million pounds TPA per year
- #1 PTA unit 180 million pounds PTA per year
- #2 PTA unit 180 million pounds PTA per year

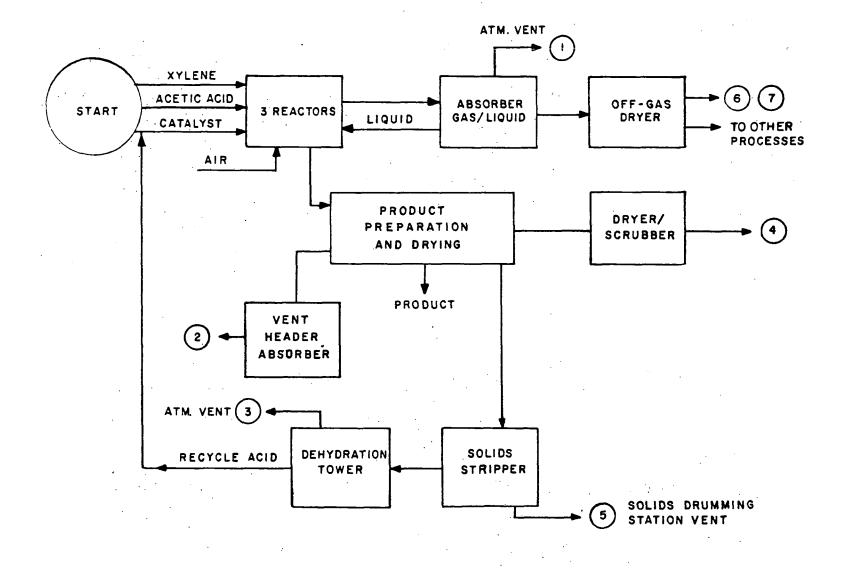


Figure II-1. Amoco's Joliet Plant terephthalic acid unit

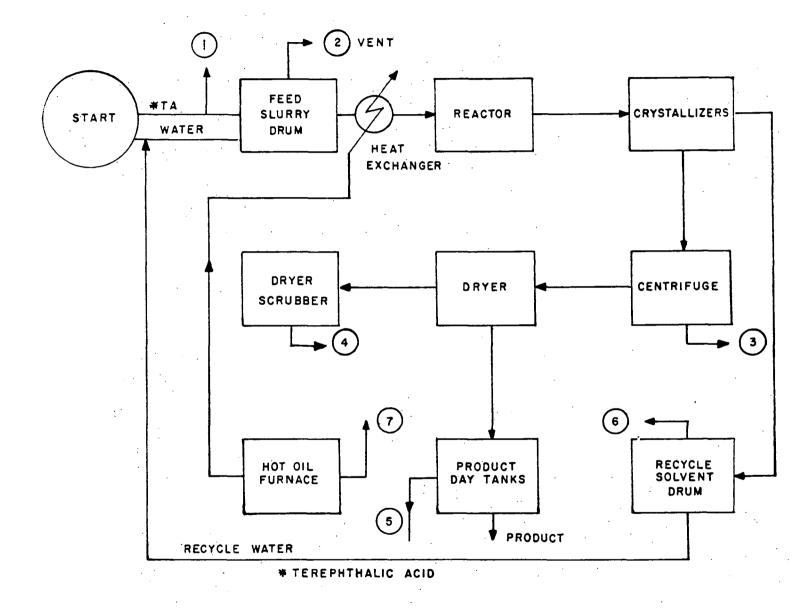


Figure II-2. Amoco's Joliet Plant purified terephthalic acid unit

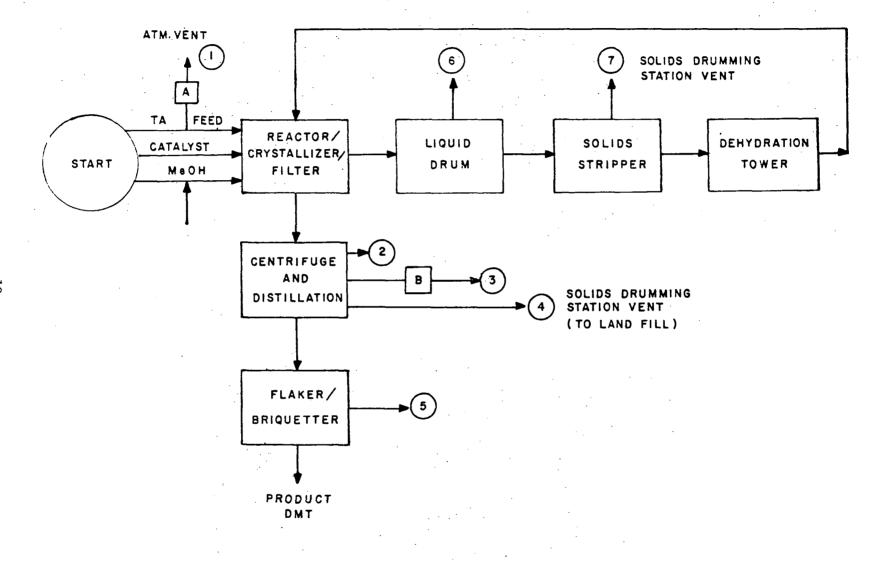


Figure II-3. Amoco's Joliet Plant dimethyl terephthalate unit

Table II-2. CURRENT EMISSION RATE FROM AMOCO'S JOLIET PLANT

	Gas	Pollutant emission rate, lb/hr			Basis for measurement	
Significant emission point	volume, scfm ^a	Part. CO HC				
TPA Unit						
1 - Reactor Absorber	-		390	62	Plant studies	
3 - Dehydration Tower	-			148	Plant studies	
4 - Dryer/Scrubber	-	15			Plant studies	
7 - Off-gas Dryer	-	·		.13	Plant studies	
PTA Unit						
1 - TPA Stream	-	25			Plant studies	
5 - Product Day Tanks	-				Plant studies	
DMT Unit						
1 - TPA Feed	-	10	1.1		Plant studies	
5 - Flaker/Briquetter	-	10			Plant studies	
6 - Liquid Drum	-			520	Plant studies	
7 - Solids Drumming Station	-	5	-		Plant studies	

^a- represents unavailable information.

#3 PTA unit - 500 million pounds PTA per year
#4 PTA unit - 500 million pounds PTA per year
#1 DMT unit - 120 million pounds DMT per year

#2 DMT unit

Flow diagrams for a typical oxidation unit, PTA unit, and DMT unit are

given in Figures II-4, II-5, and II-6, respectively. Emissions from all major emission points for the Decatur Plant are listed in Table II-3.

- 120 million pounds DMT per year.

The high pressure absorber in Figure II-4 is a valve tray scrubbing tower. The low pressure absorber is a spray tower and the dust collector is a bag filter. In Figure II-5, the crystallizer vent scrubber is a turbulent contact absorber and the dryer vent scrubber is a spray tower. The dust collectors are bag filters. These control devices are described in Appendix A.

The oxidation units, Figure II-4, employ thermal oxidizers to destroy liquid organic wastes. It should be noted that, as the size of the unit increases, hydrocarbon emissions from the absorbers on the p-xylene oxidation unit decrease. This may be the result of using more efficient scrubbers. However, as the scrubbers do not affect CO emissions, CO emissions increase slightly. A typical composition of a high pressure absorber stream is (from #1 oxidation unit): 53 pounds per hour acetic acid; 990 pounds per hour methyl acetate; and 750 pounds per hour carbon monoxide. Compositions from other emission points are primarily acetic acid and methyl acetate.

The PTA units produce only particulate emissions. The particulate is TPA.

Dimethyl ether emissions represent the major fraction of emissions from DMT units. The Decatur Plant now utilizes off gases containing dimethyl

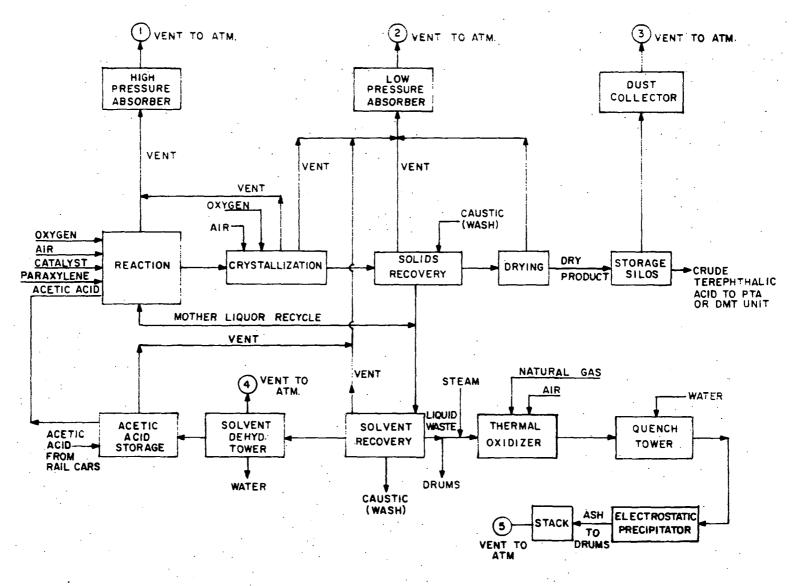


Figure II-4. Flow diagram of a typical oxidation unit at Amoco's Decatur Plant

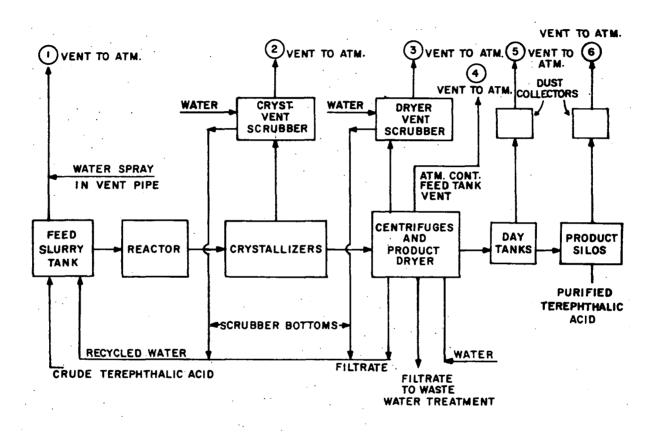


Figure II-5. Flow diagram of a typical PTA unit at Amoco's Decatur Plant

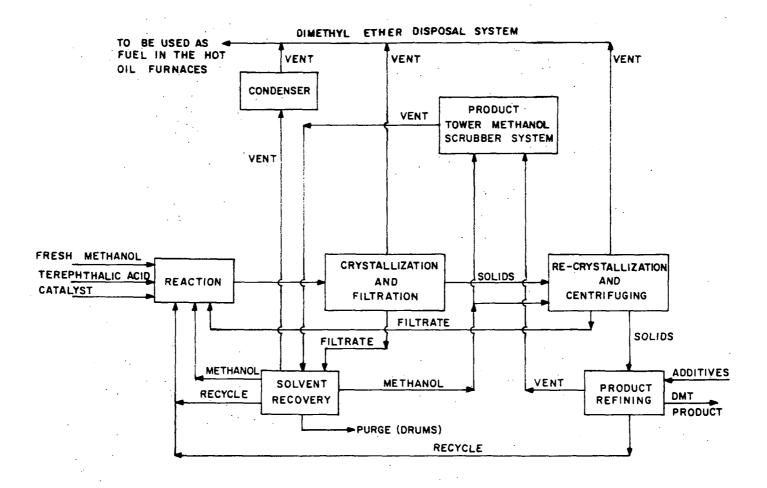


Figure II-6. Flow diagram of a typical DMT unit at Amoco's Decatur Plant

Table II-3. CURRENT EMISSION RATE FROM AMOCO'S DECATUR PLANT

	Significent emission point		Pollutant emission rate, lb/hr				
			Part. CO		HC	Basis for measurement	
No.	l Oxidation Unit						
1	- High pressure absorber	16,850		750	1043	Plant studies	
2	- Low pressure absorber	92	1		51	Plant studies	
4	- Dehydration tower vent	3,400		ł	97	Plant studies	
5	- Electrostatic precipitator	17,800	7	23.8	23.8	Plant studies	
No .	2 Oxidation Unit	İ					
1	- High pressure absorber	16,850	1	750	1043	Plant studies	
2	- Low pressure absorber	92	ł	}	.51	Plant studies	
4	- Dehydration tower vent	3,400	-	ĺ	97 .	Plant studies	
5	- Electrostatic precipitator	17,800	7	23.8	23.8	Plant studies	
No.	3 Oxidation Unit	ļ ·		j			
1	- High pressure absorber	37,800	ļ	870	919	Plant studies	
2	- Lower pressure absorber	343	ĺ		42	Plant studies	
4	- Dehydration tower vent	5,700	ł		151	Plant studies	
5	- Electrostatic precipitator	12,700	16	24.6	24:.6	Plant studies	
No.	4 Oxidation Unit		ļ]		<u> </u>	
1	- High pressure absorber	40,850		900	935	Plant studies	
2	- Lower pressure absorber	340	}	1	42	Plant studies	
4	- Dehydration tower vent	6,580	j		152	Plant studies	
5	- Electrostatic precipitator	19,400	21	29.1	29.1	Plant studies	
No.	1 PTA Unit				i		
1	- Feed slurry tank vent	46	1.3			Plant studies	
2	- Crystallizer vent	12,900	11.6			Plant studies	
4	- Centrifuge feed	1,100	4.7)	Plant studies	
No.	2 PTA Unit						
1	- Feed slurry tank vent	46	1.3		·	Plant studies	
2	- Crystallizer vent	19,000	1.8		Ì	Plant studies	
No	3 PTA Unit) ·		
1	- Feed slurry tank vent	110	5.0		!	Plant studies	
2.	- Crystallizer vent	22,700	9.5	1	{	Plant studies	
4	- Centrifuge feed	4,650	2.3		1	Plant studies	
No.	4 PTA Unit			}			
1	- Feed alurry tank vent	110	5.0			Plant studies	
2	- Crystallizer vent	28,200	1.7		[Plant studies	

either from the DMT unit as fuel in its hot oil furnaces. The result of this practice is that there are no longer any large emission sources in the DMT units.

Du PONT

DuPont has an operational DMT plant, the Cape Fear Plant, located in Phoenix, North Carolina. DuPont will also be opening a reconstructed plant in Old Hickory, Tennessee, in late 1976.

Technology

DuPont leases TPA technology from Amoco and DMT technology from Tennessee Eastman. DuPont was visited to obtain emission information from the Cape Fear Plant, but, as they lease technology, they would give out no emission data without clearance from Amoco and Tennessee Eastman. This clearance has been obtained and emission information will be sent (see Appendix C, letter from D. F. Rapp dated June 18, 1976). When it is received, it will be forwarded to the EPA Project Manager.

Emissions From the Cape Fear Plant

The State of North Carolina has supplied limited air emission information for the Cape Fear Plant. Figure II-7 presents a simplified block flow diagram of the process, and sources of greatest emissions are listed in Table II-4. There should be little particulate emission from the Cape Fear Plant as all TPA storage and transfer operations are controlled by baghouses.

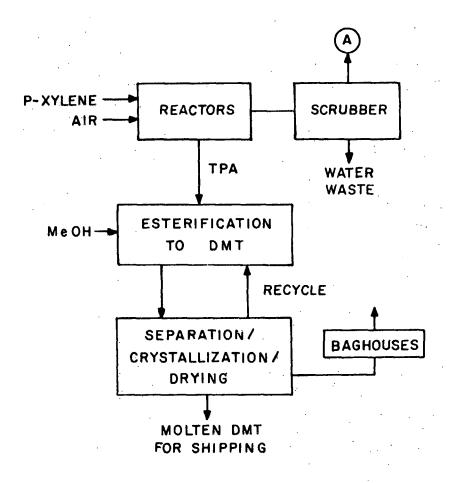


Figure II-7. Flow diagram for DuPont's Cape Fear DMT plant

Table II-4. CURRENT EMISSION LEVELS FROM DuPONT'S CAPE FEAR DMT PLANT

Significant	Gas	Pollutant emission rate, lb/hr			
emission point	volume, scfm ^a	Part.	со	нс	Basis for measurement
A - TPA reactor scrubber	-	·	1526	1596	(?)

a - represents unavailable information.

HERCULES INCORPORATED

Hercules has an operating DMT plant in Wilmington, North Carolina. In addition, Hercules will be building another DMT plant in Eastover, South Carolina, but construction is not yet started.

Technology

Hercules uses the Hercules-Witten Process to produce DMT. Most of the world production of DMT is based on this technology.

In the Hercules-Witten process, p-xylene is air oxidized to monomethyl terephthalate with the formation of some methyl toluate. The methyl toluate is recycled in the reaction. The monomethyl terephthalate is esterified with methanol to form DMT. The chemistry of the reaction is:

Air Emissions From the Wilmington Plant

Hercules was polled by the Houdry Division of Air Products by questionnaire in 1972. Hercules no longer gives out emission information to private contractors. However, it was determined during a visit to Hercules' main offices that the information on composition of emission streams contained in the Houdry report is valid.

To determine emission rates from the Hercules plant, the information in the 1972 Houdry questionnaire was scaled to reflect the increase in production capacity. A flow diagram of the Wilmington Plant is given in Figure II 8. Table II-5 lists the sources of greatest emissions. As can be seen from Table II-5, the major emission source is the p-xylene oxidation unit. Emission control equipment in use at the Wilmington Plant is described in Reference 1.

HOECHST FIBERS INTERNATIONAL

Hoechst Fibers operates a DMT plant in Spartanburg, South Carolina. Hoechst Fibers was polled in 1972 by the Houdry Division of Air Products, but their questionnaire response has remained confidential. Hoechst Fibers would not release any emission information (see Appendix A).

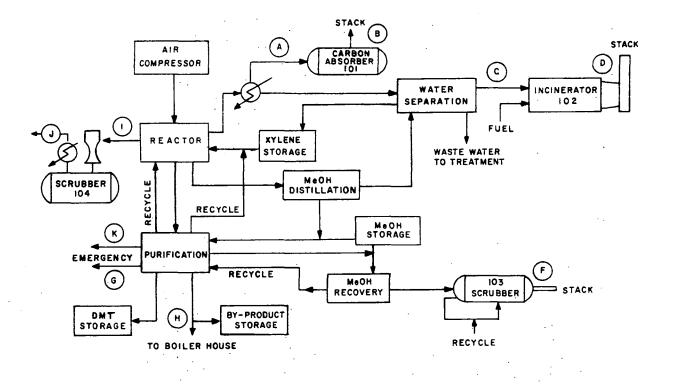


Figure II-8. Flow diagram for Hercules' Wilmington, North Carolina, DMT Plant

Table II-5. CURRENT EMISSION RATE FROM HERCULES' WILMINGTON, NORTH CAROLINA, PLANT

	Pollutant emission rate,				
Significant emission point	volume, scfm	Part.	CO ^a	HC	Basis for measurement
B - Carbon absorber	100,000		42 86	1300	Materials balance
F - Methanol recovery scrubber	2,200	.]	94	42	Laboratory analysis
J - Reactor scrubber	400			104	Calculation

 $^{^{\}mathbf{a}}$ CO concentration is 1,000 ppm by volume.

Technology and Emissions

Hoechst Fibers leases its DMT technology from Hercules Incorporated. The air emissions from the Hoechst Fibers Plant can be estimated by scaling the air emissions from Hercules' Wilmington Plant by the difference in production capacities. Table II-6 lists the expected air emissions.

Table II-6. CURRENT EMISSION LEVELS FROM HOECHST FIBERS' SPARTANBURG, SOUTH CAROLINA, PLANT

	Gas	Pollutant emission rate, 1b/hr			
Significant emission point	volume, scfm ^b	Part.	co	нс	Basis for measurement ^a
B - Carbon absorber	-		571	173	Estimate
F - Methanol recovery system	-	, ,	12.5	5.6	Estimate
J - Reactor scrubber	-			13.8	Estimate

^aSee text.

 $^{^{\}mathrm{b}}\mathrm{-}$ represents unavailable information.

TENNESSEE EASTMAN CORPORATION

Eastman has one operating DMT plant in Kingsport, Tennessee, and a plant under construction in Columbia, South Carolina. The capacity of the Columbia plant is not know, but is estimated at 522 million pounds per year. Eastman produces only DMT.

Technology

Very little is known about the technology used in the Eastman process. Basically, it is a two-step process involving the formation of a crude TPA intermediate and esterifying this intermediate to form DMT. 1

To form the crude TPA, p-xylene, acetaldehyde, and acetic acid are air oxidized under conditions of moderate temperature and pressure. The TPA is then used as feedstock for the DMT unit. In the DMT unit, TPA is esterified with methanol plus the addition of a small amount of xylene. The process stream passes through several distillation columns to purify the DMT. All of the TPA manufactured is used for DMT production.

Emissions From the Kingsport Plant

Flow diagrams for the TPA and DMT units at Eastman's Kingsport Plant are given in Figures II-9 through II-13. The Kingsport Plant has a production capacity of 600 million pounds of DMT per year.

Emission information was obtained from Eastman personnel during a site visit. The latest emission information was taken from state permit forms dated June 1974. These permit forms are included in Appendix A.

Figure II-9 is a flow diagram for the TPA unit. This unit has a design capacity of 66,500 pounds of TPA per operating hour. Table II-7 lists

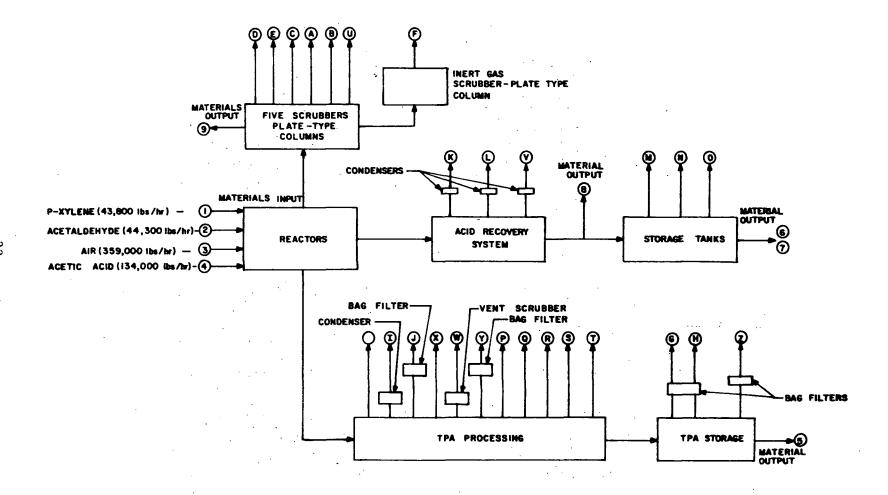


Figure II-9. Flow diagram for Tennessee Eastman's Kingsport, Tennessee, Plant

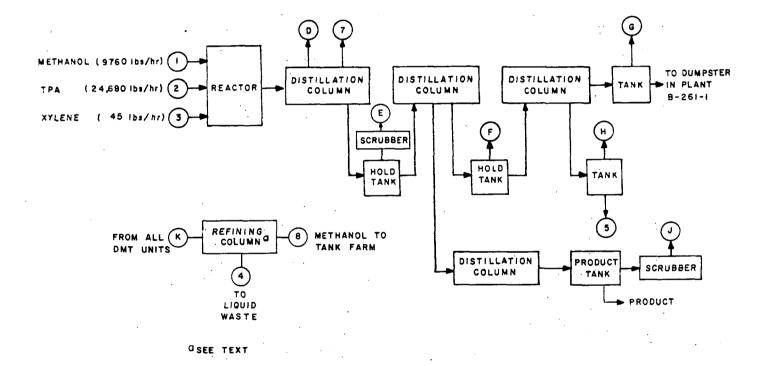


Figure II-10. Flow diagram for Eastman's DMT Plant B-237A-1

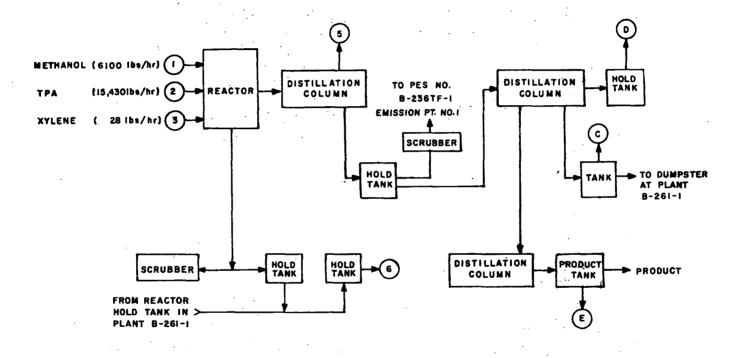


Figure II-11. Flow diagram for Eastman's DMT Plant B-237-1

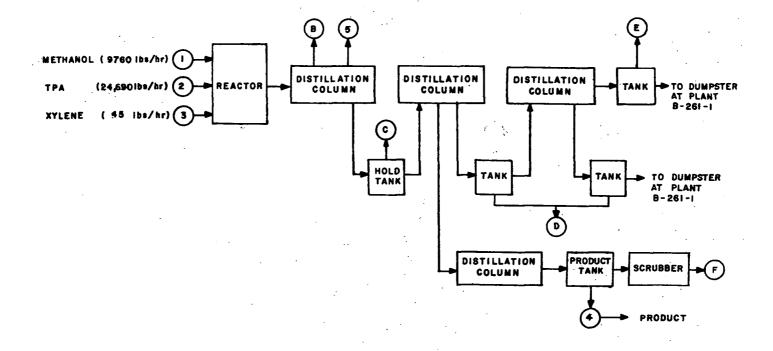


Figure II-12. Flow diagram for Eastman's DMT Plant B-261A-1

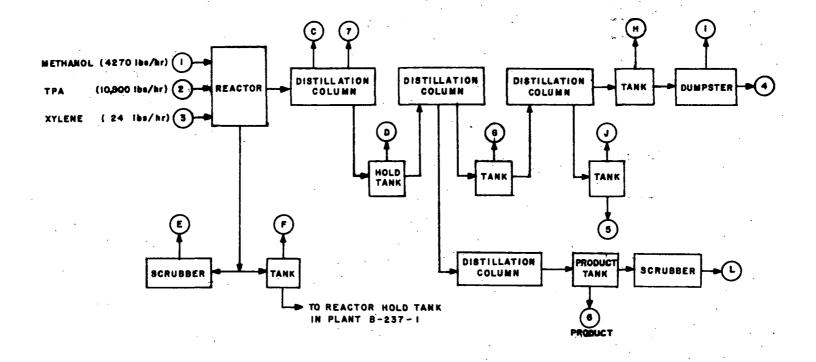


Figure II-13. Flow diagram for Eastman's DMT Plant B-261-1

all major emission sources. Emission information for all sources is contained in the permit applications in Appendix A.

Emissions from the TPA unit are primarily CO and hydrocarbons. The source of the greatest emissions is the reactor scrubber. A typical hydrocarbon emission composition is (from emission point U): 270 lb/hr methyl acetate; 10.4 lb/hr p-xylene; 0.73 lb/hr acetic acid; 84.5 lb/hr acetaldehyde; and 12 lb/hr methane.

The Kingsport facility employs four plants to produce DMT from TPA. The capacities of these plants are: Plant 237A-1, 150 million pounds per year; Plant 261A-1, 240 million pounds per year; Plant 261-1, 105 million pounds per year; and Plant 237-1, 105 million pounds per year. The combined output capacity is 600 million pounds per year.

Flow diagrams for the four plants are given in Figures II-10 through 11-13. All significant emission sources are given in Table II-7. Between the TPA and DMT units there is a tank farm. Emissions from the tank farm are negligible compared to those from the processes. The refining column, shown in Figure II-10, is used to purify methanol used in the reaction. The recycled methanol is then reused as feed to the reactors. The refining column is fed from the holding tanks and the purified methanol is stored in a tank farm. Compared with the emissions from the TPA unit, emissions from the DMT unit are small. The greatest source of emissions from each DMT Plant are methanol emissions from the product tank scrubber (e.g., emission point J, Figure II-10). However, there is also a large hydrocarbon emission from the methanol refining column (point K, Figure II-10) that is composed of: acetaldehyde, 53 lb/hr; dimethyl ether, 416 lb/hr; methyl acetate, 103 lb/hr; and methanol, 29 lb/hr.

Table II-7. CURRENT EMISSION RATE FROM EASTMAN'S KINGSPORT PLANT

	Gas	Pollutant emission rate, lb/hr		emission rate, Gas 1b/hr		emission rate, Gas lb/hr	
Significant emission point	volume, scfm ^a	Part.	cob	нс	Basis for measurement		
TPA Unit							
A - Reactor scrubber column	7,272		167	63.6	Measurement		
B - Reactor scrubber column	7,272		167	63.6	Measurement		
C - Reactor scrubber column	9,600			364.7	Estimate		
D - Reactor scrubber column	2,322		53.3	20.16	Measurement		
E - Reactor scrubber column	2,322		53.3	20.16	Measurement .		
G - TPA storage bag filter	798	1.0		2.65	Part Estimate HC - Measurement		
I - TPA processing condenser	223			16.02	Measurement		
U - Reactor scrubber column	15,000		344	377	Measurement		
Z - TPA storage bag filter	786	1.5		2.65	Part Estimate HC - Measurement		
DMT Unit B-261-1							
L - Product tank scrubber	-			9.4	Estimate		
DMT Unit B-261A-1	1						
F - Product tank scrubber	-			18.8	Estimate		
DMT Unit B-237-					• .		
E - Product tank scrubber	-			8.2			
DMT Unit B-237A-1			i				
J - Product tank scrubber	_			9.4	Estimate		
K - Refining column	_				Measurement		

a- signifies unavailable information.

bCO concentration is 5,000 ppm by volume.

Emissions From the Columbia Plant

The Columbia, South Carolina, DMT Plant will be going on-line in 1976. The technology used in the Columbia Plant is similar to that used in the Kingsport Plant. A flow diagram of the TPA unit is given in Figure 11-14 and of the DMT unit in Figure II-15.

Emission information was obtained from the Eastman personnel in the form of new facility permit applications to the State of South Carolina. Production capacity is considered confidential; however, a rough estimate of the production capacity can be determined. It is assumed that the TPA reactor technology and the reactor scrubber are the same at both the Kingsport and Columbia Plant. As CO will not be scrubbed, TPA output from the Columbia Plant can be determined from the ratio of CO emissions of the Kingsport to the Columbia Plant - yielding a DMT production rate at the Columbia Plant of 522 million pounds per year.

Emissions from all major emission points at the Columbia Plant are given in Table II-8. The major emission stream from the DMT unit is from the methanol recovery unit. This stream is composed of: dimethyl ether, 583 lb/hr; methyl acetate, 245 lb/hr; methanol, 71 lb/hr; acetaldehyde, 71 lb/hr; and some spent catalyst. Eastman is designing a system to burn this stream in an incinerator.

FACTORS AFFECTING EMISSIONS

Hercules and Tennessee Eastman report variations in emissions during normal operation.² As the largest emissions are from the reactor and the methanol recovery scrubber, discussions of emission variations will be confined to these two emission points.

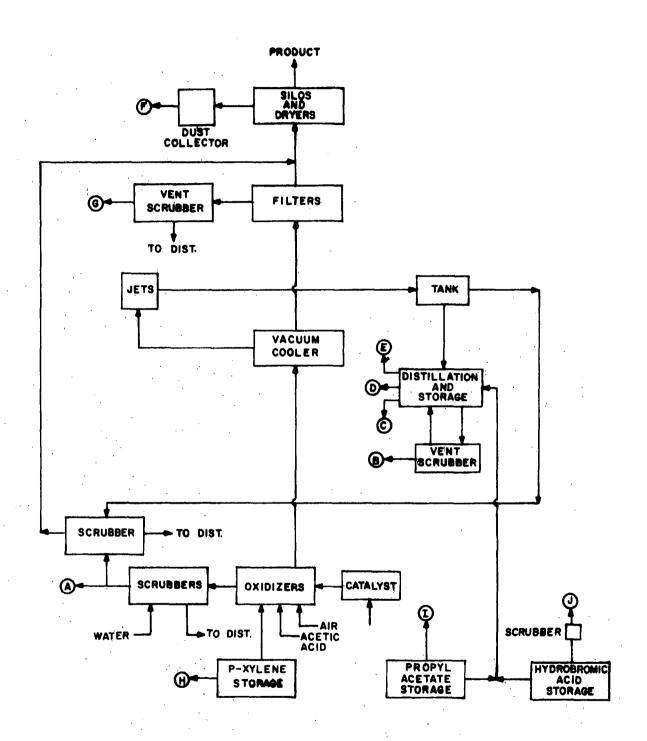


Figure II-14. Flow diagram for Eastman's Columbia, South Carolina, TPA unit

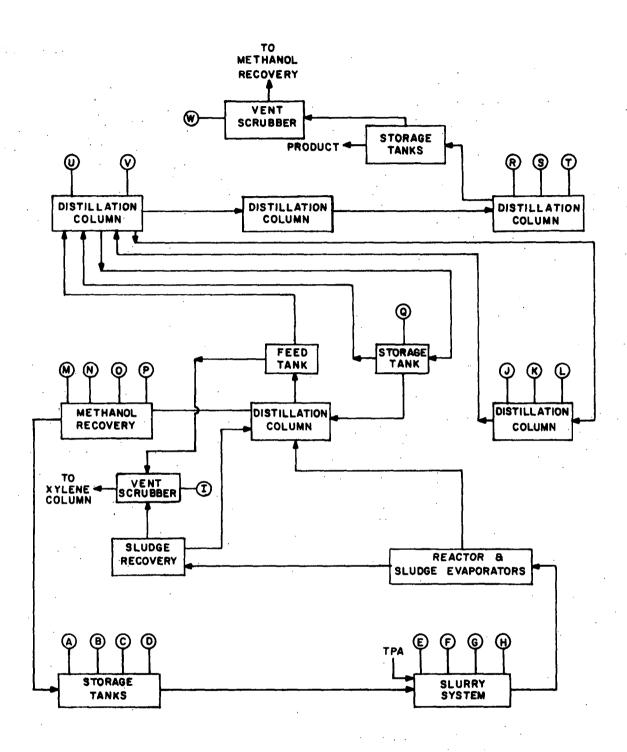


Figure II-15. Flow diagram for Eastman's Columbia, South Carolina, DMT Plant

Table II-8. CURRENT EMISSION RATE FROM EASTMAN'S COLUMBIA PLANT

	Gas	Pollutant emission rate, 1b/hr			D
Significant emission point	volume, scfm ^a	Part.	СО	нс	Basis for measurement
TPA Unit	·				
A - Oxidizer scrubber vent			683	99	Calculation
F - Storage dust collector	-			62.5	Calculation
DMT Unit		·			
P - Methanol recovery vent	_			970	Calculation
W - Storage tank scrubber	-			10	Calculation

a- represents unavailable information.

Factors Affecting Emissions at Hercules' Wilmington Plant

Hercules reports that emissions from the reactor vary as a function of reaction rate. As the reaction proceeds, oxygen emissions decrease and CO emissions increase. During start-up and shut-down, the carbon adsorbers are bypassed. However, as the plant is operating at ~96 percent utilization, emissions from start-up and shut-down should be small.

Hercules reports that xylene emissions from the reactor average 0.08 percent of total stream flow, and can range from 0.01 to 0.5 percent. The average composition was determined for full capacity and typical adsorber performance.

Hercules reports that hydrocarbon emissions from the methanol concentrator average 0.4 percent of total stream flow, and can vary from 0.05 to 1.0 percent. Similarly, CO emissions average 1 percent but can vary from 0.5 to 1.5 percent. However, they do note that the composition is stable during normal operating conditions, indicating

that using average compositions to determine yearly emission rates should give accurate results.

Factors Affecting Emissions at Tennessee Eastman's Kingsport Plant

Eastman reports that variations in composition from the p-xylene oxidizers are not significant. Hydrocarbon emissions from the refining column varied by 20 percent of the total flow during normal operation.

It appears that variations in emissions may be significant in the Hercules-Witten process, but not in the Eastman process. This could signal the need for overdesigning emission control equipment to handle the variation in composition. However, as DMT-TPA plants have a high rate of utilization (e.g., Eastman operates full time, 50 weeks a year), emissions estimates using average compositions should give an accurate representation of yearly emission rates.

REFERENCES

- Pervier, J.W., R. C. Barley, D. E. Field, B. M. Friedman, R. B. Morris, and W. A. Schwartz. Survey Reports on Atmospheric Emissions From the Petrochemical Industry. Volume II. Houdry Division, Air Products and Chemicals, Inc. Marcus Hook, PA. U.S. Environmental Proctection Agency, Research Triangle Park, N. C. Report Number EPA-450/3-73-005-b. April 1974.
- 2. This information was obtained from questionnaries completed by the operating companies for the Houdry Division of Air Products, Inc., in 1972. Private communication with Andrew Trenholm, EPA Project Officer.

SECTION III

APPLICABLE BEST SYSTEMS OF EMISSION REDUCTION

INTRODUCTION

Only two pollutants, CO and hydrocarbons, are emitted from DMT-TPA plants in quantities large enough to consider the use of further emission control devices. Particulate emissions will not be of concern for two reasons: (1) only Amoco's Decatur Plant produces a particulate loading that exceeds state standards and this particulate loading is from the incinerator used to burn liquid wastes and not from the process itself; (2) most manufacturers are now using, or plan to use, the best systems of emission control (i.e., baghouses or electrostatic precipitators). Therefore, the magnitude of particulate emissions is small. For example, Eastman's Kingsport Plant has a total particulate emission rate of 2.5 pounds per hour (see Table II-7).

The only major emission point of both hydrocarbons and CO is from the p-xylene oxidizer in the TPA unit. Large emissions of just hydrocarbons come from only a limited number of emission points in each DMT-TPA plant.

Emission control via the use of different technologies is not a feasible approach. As shown in Table V-2, the difference in emission factors between each of the three DMT-TPA manufacturing technologies is small. Also, as can be seen from Table V-2, the process with the lowest emission factor for hydrocarbons (the Amoco Process), has the highest emission factor for CO and vice versa. The reason for these differences are not known. Therefore, definite conclusions cannot be reached. However,

from the information that is available, it would appear that the use of control devices on each emission point and not the use of one technology in place of another would be the best approach to emission control.

EMISSION CONTROL SYSTEMS PRESENTLY IN USE

Emission Control of Carbon Monoxide

No emission control system presently in use in DMT-TPA plants is designed to reduce CO emissions.

Emission Control of Hydrocarbons

Only carbon adsorbers and scrubbers are used in DMT-TPA plants to limit hydrocarbon emissions. In the following, the efficiency and type of emission control equipment used by each facility will be identified. These devices are described further in Appendix A and in Reference 1.

Hercules' Wilmington Plant uses an activated carbon adsorber to control hydrocarbon emissions from its p-xylene reactor (see Figure II-8, emission point B). The carbon adsorber is 91 percent efficient in removing p-xylene from the reactor off gas stream. In addition, a wet (water) scrubber is used after the methanol recovery device (see Figure II-8). The methanol recovery device is a condenser and the scrubber is a spray tower design. This device is 99 percent efficient in removing methanol.

Amoco uses wet tower scrubbers to remove 97 percent of the acetic acid from off gases from the p-xylene oxidizer. The Decatur Plant burns organic emissions (mostly dimethyl ether) from the DMT process in its powerhouse. This system of emission control is believed to be ~100 percent efficient.

Eastman uses a series of wet (water) tray type absorbers to treat off gases from its p-xylene oxidizer (see Figure II-9, emission points A to F). These devices remove almost all of the acetic acid, but no other organics from the off gas stream. Acetic acid accounts for ~80 weight percent of the organic in the gas stream.

Eastman does not treat off gases from its refining tower (see Figure II-10, emission point K). This stream consists mostly of dimethyl ether so liquid scrubbing is not a viable control technique. Eastman plans to burn this stream in an incinerator.

THE BEST SYSTEM OF EMISSION CONTROL

Thermal incinerators, flaring, and carbon adsorbers can all be used to limit hydrocarbon emissions with greater than 90 percen efficiency.^{2,3} They will also limit CO emissions, but to a lesser degree.

Thermal incinerators are used by the formaldehyde manufacturing industry with stream flows and composition similar to those encountered from the p-xylene oxidation step. In the formaldehyde industry, thermal incinerators achieve almost 100 percent efficiency in removing hydrocarbons. Ninety percent efficiency can be expected from flaring, with efficiencies as high as 99 percent being reported for flares used at refineries. Carbon adsorbers, used by Hercules on their p-xylene oxidation units are 95 percent efficient in removing hydrocarbons.

For CO, CO boilers are the best system of emission control with CO removal efficiencies of greater than 99.99 percent. CO boilers will also reduce hydrocarbon emissions bypractically 100 percent. There are no combustion devices presently in use by the DMT-TPA industry, therefore, it is difficult to predict equipment performance. Although capital and operating costs are high for CO boilers, they can double as steam

generating units which makes their use more economical. However, it has been shown that byproduct steam credits cannot usually offset operating costs. 7

Manufacturers of CO boilers gurantee a minimum of 95 percent efficiency for hydrocarbon and CO removal with much higher efficiencies possible (see Appendix A). A CO boiler is equivalent to carbon adsorption flaring or thermal incineration for the removal of hydrocarbons and superior to these types of control devices for the removal of CO. Therefore, a CO boiler will be considered the best system of emission control and, to be on the conservative side, 95 percent efficiency for hydrocarbon and CO removal will be assumed.

There are two classes of streams that the CO boiler will have to control:

- 1. A high volume (up to 100,000 scfm) low concentration stream of CO and hydrocarbons from the p-xylene oxidizer; and
- 2. Low volume, high concentration streams from other sections of the plant.

The CO boiler should be used with a heat recovery system to make its use more economical. As some of the low volume, high concentration streams may be above the lower explosive limit, special precautions, such as premixing with the high volume, low concentration streams may be required.

Tables III-1 to III-7 list the achievable emissions utilizing a CO boiler that is 95 percent efficient in removing CO and hydrocarbons.

Factors Affecting Emission Control Capability

The CO boiler should be constructed of such a size that it can handle the effects of plant expansions. Plant expansion will increase the flow rate from the p-xylene oxidizer and from the hydrocarbon recovery units.

As CO boilers are combustion devices, operating at too low temperatures or too high flow rates will have the greatest effect on emission control capability.

Table III-1. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - AMOCO, JOLIET PLANT

		Achievable emission levels lb/hr	
Significant emission points	Control technique	CO	НC
TPA Unit			. :
l - Reactor absorber	CO boiler	19.5	3.1
3 - Dehydration tower	CO boiler	-	7.4
7 - Off-gas scrubber	CO boiler		0.7
DMT Unit			
6 - Liquid drum	CO boiler		26

Table III-2. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - AMOCO, DECATUR PLANT

		emissio	vable n levels hr
Significant emission points	Control technique	СО	нс
No. Oxidation Unit			
1 - High pressure absorber	CO boiler	37.5	52.2
2 - Low pressure absorber	CO boiler		2.6
4 - Dehydration tower vent	CO boiler	i .	4.9
No. 2 Oxidation Unit			
1 - High pressure absorber	CO boiler	37.5	52.2
2 - Low pressure absorber	CO boiler		2.6
4 - Dehydration tower vent	CO boiler		4.9
No. 3 Oxidation Unit			
1 - High pressure absorber	CO boiler	43.5	46
2 - Low pressure absorber	CO boiler		2.1
4 - Dehydration tower vent	CO boiler		7.6
No. 4 Oxidation Unit			·
1 - High pressure absorber	CO boiler	45	46.8
2 - Low pressure absorber	CO boiler		2.1
4 - Dehydration tower vent	CO boiler		7.6

Emissions from the liquid waste incinerator (Figure II-4, Emission Point 5) are not included.

Table III-3. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - DUPONT, CAPE FEAR PLANT

		Achievenission 1b/l	n levels,
Significant emission points	Control technique	СО	нс
A - TPA reactor scrubber	CO boiler	76.3	79.8

Table III-4. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - HERCULES, WIL-MINGTON PLANT

		Achie emissio lb/	n levels,
Significant emission points	Control technique	СО	нс
B - Carbon adsorber	CO boiler	214.3	65
F - Methanol recovery scrubber	CO boiler	4.7	2.1
J - Reactor scrubber	CO boiler		5.2

Table III-5. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - HOECHST FIBERS, SPARTANBURG PLANT

		Achiev emission 1b/h	levels,
Significant emission points	Control technique	СО	нс
B - Carbon adsorber	CO boiler	28.6	8.7
F - Methanol recovery system	CO boiler	0.63	0.3
J - Reactor scrubber	CO boiler		0.7

Table III-6. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - EASTMAN, KINGS-PORT PLANT

		Achiev emissior 1b/h	levels,
Significant emission points ^a	Control technique	СО	нс
TPA Unit			
A-E - Reactor scrubber colums	CO boiler	22.0	26.6
I - TPA processing condenser	CO boiler		0.8
U - Reactor scrubber column	CO boiler	17.2	18.9
DMT Unit B-261A-1			
F - Product tank scrubber	CO boiler	·	0.94
DMT Unit B-237A-1		:	
K - Refining column	CO boiler		30.1

^aSeveral emission points listed in Table III-3 are not listed in this table because their uncontrolled HC emission rate is less than 10 pounds per hour.

Table III-7. ACHIEVABLE EMISSION LEVELS WITH BEST CONTROL TECHNIQUES - EASTMAN, COLUMBIA PLANT

		Achier emission 1b/	n levels,
Significant emission points	Control techniques	СО	нс
TPA Unit			
A - Oxidizer scrubber vent	CO boiler	34.2	5.0
F - Storage dust collector	CO boiler		3.1
DMT Unit			
P - Methanol recovery vent	CO boiler		48.5
W - Storage tank scrubber	CO boiler		0.5

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SECTION IV

SUMMARY OF STATE AND LOCAL AIR POLLUTION CONTROL REGULATIONS

INTRODUCTION

All state and local laws applicable to DMT-TPA plants are listed in the following. As DMT-TPA plants do not emit $SO_{\mathbf{x}}$ or $NO_{\mathbf{x}}$, there will be no reference to regulations for $SO_{\mathbf{x}}$ and $NO_{\mathbf{x}}$. Pertinent sections of state and local air pollution control regulations are given in Appendix C.

There are very few state and local laws regulating emissions from DMT-TPA plants. Most states do not regulate hydrocarbon or CO emissions, but all states regulate particulate emissions. Only Illinois regulates emissions of both CO and hydrocarbons.

REGULATIONS FOR ILLINOIS (AMOCO, JOLIET PLANT)

State regulations apply for the Joliet area. Illinois has classified TPA manufacture as a petrochemical process. Amoco and others are currently contesting this classification.

Hydrocarbon Emissions

Different regulations apply to the emission of hydrocarbons depending on whether or not the TPA manufacturing process is classified as a petrochemical process. If the TPA process is not considered a petrochemical process regulations require that emissions of more than 8 pounds per hour of hydrocarbons be treated by pollution control equipment (catalytic incincrators, vapor recovery systems, etc.) that is capable of reducing organic emissions by 85 percent or more.

If TPA manufacturing is considered a petrochemical process, regulations require that no organic materials be discharged to the atmosphere in concentrations greater than 100 ppm equivalent methane.

Carbon Monoxide (CO) Emissions

The DMT-TPA industry has been classified as a petrochemical industry. As such, CO bearing waste streams must be burned in a direct flame after-burner or carbon monoxide boiler so that the resultant concentration of carbon monoxide is less than or equal to 200 ppm corrected to 50 percent excess air.

Particulate Emissions

The state of Illinois uses process weight tables to determine allowable particulate emission limits. Table IV-1 compares the allowed and actual particulate emissions from each significant emission point at the Joliet Plant. As can be seen from Table IV-1, the Joliet Plant is in compliance with the standards for the TPA and PTA unit. Process weights for the DMT unit are not known, but, as the DMT unit is being shut down, compliance is not essential.

REGULATIONS FOR TENNESSEE (EASTMAN, KINGSPORT PLANT; DUPONT, OLD HICKORY PLANT)

The DuPont Plant in Old Hickory is regulated by the Metropolitan Health
Department of Nashville and Davidson Counties and should be coming on-line

Table IV-1. ALLOWABLE PARTICULATE EMISSIONS FOR AMOCO'S JOLIET DMT-TPA PLANT^a

Significant emission point ^d	Particulate emission, lb/hr	emission, weight,		
TPA unit				
4-dryer/scrubber	15	15,182 ^b	15.9	
PTA unit				
1-TPA stream	25	41,000	31.0	
DMT unit				
1-TPA feed	10	_c	_c	
5-flaker/briquetter	10	-	-	
7-solids drumming station vent	5		-	
	I .	J	I	

From process weight table for state of Illinois. See Appendix C.

 $^{^{\}mathrm{b}}\mathrm{Estimate}$ based on total TPA production.

^cSee text.

dSee Figure II-1.

this year. The Kingsport Plant is regulated by the Tennessee Division of Air Pollution Control. There are no regulations for CO emissions from DMT-TPA plants in Tennessee.

Hydrocarbon Emissions

Regulations for hydrocarbon emissions require that new sources install and utilize the best equipment and technology for controlling organic gaseous emissions.

Particulate Emissions

Tennessee regulates particulate emissions through the use of a general process weight table. The magnitude of particulate emission is not known for DuPont's Old Hickory Plant. Particulate emissions from Eastman's Kingsport Plant are regulated by bagfilters and are well within the state standards.

REGULATIONS FOR ALABAMA (AMOCO, DECATUR PLANT)

TPA manufacture is not considered a petroleum process in Alabama.

Hydrocarbon Emissions

Alabama regulates emissions from the storage and transfer of hydrocarbons. However, there are no regulations limiting hydrocarbon emissions from the TPA process used at the Decatur Plant.

Carbon Monoxide Emissions

The state of Alabama does not regulate the emission of CO from the DMT-TPA process. For petroleum processes, the state requires that CO bearing waste streams be burned.

Particulate Emissions

Alabama's particulate emission regulations are based on a general process weight table. All significant sources of particulate emissions from the TPA process itself meet state standards. However, particulate emissions from the incinerators that are used to burn liquid wastes from the oxidation units are not in compliance with state standards (see Appendix A, letter from Paul Saywell, dated April 21, 1976). Particulate emissions from the incinerators are controlled by electrostatic precipitators. It is not known by what means Amoco will meet the state regulations on particulate emissions.

REGULATIONS FOR SOUTH CAROLINA (HOECHST FIBER'S SPARTANBURG PLANT)

South Carolina does not regulate hydrocarbon or CO emissions. It does, however, regulate particulate emissions through the use of process weight tables. As neither particulate loadings or process weights are known for the Spartanburg Plant, it is impossible to judge compliance.

REGULATIONS FOR NORTH CAROLINA (HERCULES, WILMINGTON PLANT; DUPONT, CAPE FEAR PLANT)

The state of North Carolina does not regulate the emission of carbon monoxide.

Hydrocarbon Emissions

North Carolina regulates emissions from the storage of hydrocarbons by requiring vapor emission control systems.

North Carolina regulates emissions of photochemically reactive material by requiring that most organic emissions be reduced by at least 85 percent by an appropriate control device. Hercules and DuPont employ control devices that are greater than 90 percent efficient. This regulation applies only to emission points producing organic emissions of more than 40 pounds per day.

Particulate Emissions

North Carolina regulates particulate emissions by a general process weight chart. Particulate emissions and process weights from the DuPont, Cape Fear Plant are not known. However, as the process weight chart for Illinois and North Carolina are similar and as DuPont leases its TPA technology from Amoco, and Amoco's Joliet Plant is within the particulate emission limits, it can be assumed that DuPont is within the particulate emission limits.

Hercules reports no particulate emissions nor are particulate loadings from the Wilmington Plant mentioned in any material received from the state. Therefore, it can only be assumed that both plants are in compliance with state standards.

THE EFFECT OF STATE REGULATIONS ON DMT-TPA PLANTS

As the preceding has shown, only the Amoco, Joliet Plant and Decatur Plant are in violation of any state standards.

The Joliet Plant will be in violation of state hydrocarbon and CO emission standards if the state maintains that TPA manufacture is a petrochemical process. However, these standards will be met if the best system of emission control (a CO boiler) is utilized.

The Decatur Plant could probably meet Alabama particulate emission standards if baghouses were added after the electrostatic precipitators on the incinerators. However, as the incinerators are not an integral part of the TPA process and as the total impact on using baghouses on this one

plant would be small in comparison to industry wide particulate emissions, this report will not consider the effects of using the best system of emissions control on the incinerators at the Decatur Plant.

Tables IV-2 through IV-4 list the expected emission reduction for each plant when the best system of emission control is implemented. As only three different technologies will be used on future plants, expected emission reductions are only calculated for: the Eastman, Kingsport Plant; the Amoco, Decatur Plant; and the Hercules, Wilmington Plant.

Table IV-2. EMISSION REDUCTION FROM AMOCO'S DECATUR PLANT, PLANT SIZE 2140 \times 10 6 1bs DMT/YEAR

Source	Contro l technique	Emission rate w/ best systems, lb/hr		Current control level, lb/hr		Pmission reduction	
		œ	HC	œ	HC	œ	HC
Oxidation units	00 boiler	163.5	231.6	3270	4632	3107	4400

Table IV 3. EMISSION REDUCTION FROM EASTMAN'S KINGSPORT PLANT PLANT SIZE 600 x 10^6 1bs DMT/YEAR

Source	Control technique	Emission rate w/ best systems, lb/hr		Current control level, lb/hr		Emission reduction	
		СО	HC	∞	HC	ω	HC
TPA unit	CO boiler	39.2	46.3	784.6	925	745.4	878.7
DMT units	CO boiler	İ	31		620		589

Table IV-4. EMISSION REDUCTION FROM HERCULE'S WILMINGTON PLANT PLANT SIZE 1300 \times 10 6 1bs DMT/YEAR

Source	Control technique	Emission rate w/ best systems, lb/hr		Current control level lb/hr		Buission reduction	
		α	HC	œ	BC	ω	HC
DMT production	∞ boiler	219	72.3	4380	1446	4161	1374

SECTION V

ESTIMATED EMISSION REDUCTION

INTRODUCTION

In the following the impact of NSPS for hydrocarbons and CO will be calculated for the DMT-TPA industry. Model IV, developed by the Research Corporation of New England will be used.

Model IV

Model IV is treated extensively in Reference 1 and will not be discussed here. Table V-1 contains a listing and definition of the parameters required for Model IV. Briefly, the following equations will be used:

$$T_S = E_S K (A - B) + E_S K (B + C)$$
 (1)

$$T_N = E_S K (A - B) + E_N K (B + C)$$
 (2)

$$T_{Nd} = E_{111d} K (A - B) + E_N K (B + C)$$
 (3)

$$T_S - T_{Nd} = K (B + C) (E_S - E_{111d})$$
 (4)

Values of Model IV Parameters for the DMT-TPA Industry

The following presents discussions of values given each Model IV parameter.

Table V-1. PARAMETERS USED IN MODEL IV2

- K = normal fractional utilization rate of existing capacity, assumed constant during time interval.
- A = baseline year production capacity (production units/yr).
- B = production capacity from construction and modification to replace obsolete facilities (production units/yr).
- C = production capacity from construction and modification to increase output above baseline year capacity (production units/ yr).
- P_B = construction and modification rate to replace obsolete capacity (decimal fraction of baseline capacity/yr).
- P_C = construction and modification rate to increase industry capacity (decimal fraction of baseline capacity/yr).
- E_S = allowable emissions under existing regulations (mass/unit capacity).
- E_{N} = allowable emissions under standards of performance (mass/unit capacity).
- $E_{\star \star}$ = emissions with no control (mass/unit capacity).
- E_{111d} = allowable emissions under state regulations as required by Section 111(d) of the Clean Air Act.
 - $T_S = total emissions in ith year under baseline year regulations (tons/yr).$
 - T_{N} = total emissions in ith year under new or revised NSPS which have been promulgated in the jth year (tons/yr).
 - T_{ii} = total emissions in ith year assuming no control (tons/yr).
 - T_A = total emissions in baseline year under baseline year regulations (tons/yr).

Normal Fractional Utilization (K) - The normal fractional utilization can be calculated by dividing the production of DMT for 1975 by the production capacity of the industry. Acid production is multiplied by 1.17 to convert to equivalent DMT production. The 1975 production was 4,650 million pounds of DMT. The 1975 production capacity was estimated by averaging the known July 1974 and May 1976 production capacity. This yields a 1975 production capacity of 4,655 million pounds per year and a normal fractional utilization of 1.0. This high value of the normal fractional utilization is entirely in keeping with the fact that DMT-TPA manufacture is still a growing industry with growth attempting to match demand.

<u>Production Capacity (A)</u> - This value, calculated above, is 4,655 million pounds per year.

Increase in Industrial Capacity Over 1975 Capacity (PC) - The annual growth rate between the years 1975 and 1985, was given in Section I as 11 percent.

Replacement Rate of Obsolete Capacity (PB) - It will be assumed that the obsolescence rate for the DMT-TPA industry may be approximated from IRS depreciation guidelines. This Reference suggests an asset guideline life of 11 years. As a conservative estimate, the actual life will be taken as twice this period or 22 years, yielding a simple obsolescence replacement rate of $P_{\rm R}=0.045$.

In Reference 1 a simple absolescence rate of 0.45 was calculated based on the replacement of obsolete or economically marginal plants in 1972. It can be assumed that during the recession of 1974 to 1975, most of these facilities were prematurely closed (see Table I-1). Therefore, the absolescence rate may be expected to be even smaller than 0.045.

Amoco has recently begun using titanium liners in their reactors (see Trip Report, Appendix A), which have an expected lifetime of greater than 10 years. Prior to the use of these liners the lifetime of the p-xylene reactor, the main equipment component of TPA manufacture, was a major problem. The reaction conditions used in the Amoco process (400 psi, 400°F) are the most severe of any DMT-TPA Process. Although no estimates are available on the equipment lifetimes for the Hercules-Imhaussen and Eastman Processes, they can be expected to be longer than the equipment lifetime in the Amoco Process as reaction conditions are less severe. Therefore, the original obsolescence rate of 0.045 will be used to represent a conservative estimate of the obsolescence rate.

Uncontrolled Emission Factor (EU) - As mentioned in Section II, there are only three technologies used for producing DMT-TPA: (1) the Amoco process (TPA); (2) the Eastman process (DMT); and (3) the Hercules Imhaussen/Witten process (DMT). As all other producers lease one or more of these technologies, it should be sufficient to simply calculate emission factors for a plant using each technology. In addition, as the major emission source is the p-xylene oxidation unit, emissions from producing DMT should be comparable with emissions from producing TPA. Therefore, the same emission factors will be used for both DMT and TPA production and all DMT-TPA production will be expressed in DMT equivalents.

For each technology the emissions from the p-xylene oxidizer are treated by scrubbing or carbon adsorption to recover hydrocarbons. As this operation can be considered an integral part of the process, uncontrolled emissions will be represented by waste streams leaving the recovery device. The same will hold true for the scrubber on the methanol recovery device at Hercules' Wilmington Plant (see Figure II-8). All other emission streams are uncontrolled.

Table V-2 gives the uncontrolled emission factors for Amoco's Decatur Plant, Hercules' Wilmington Plant, and Eastman's Kingsport Plant. These values were taken from Tables II-2, II-5 and II-6. To simplify calculations, production capacities will be presented in DMT equivalents (1 pound of TPA is equivalent to 1.17 pound of DMT).

The emission factor for hydrocarbons from Hercules' Wilmington Plant is low because Hercules uses a highly efficient carbon adsorber to trap p-xylene emissions. Emissions from Amoco's Decatur Plant are high because Amoco has two old production lines with inefficient scrubbers.

Approximately 50 percent of the production capacity for DMT-TPA is based on the Amoco process; 29 percent on the Hercules process; and 20 percent on the Eastman process. As no one process accounts for the majority of the manufacture of DMT-TPA, average uncontrolled emission factors will be used to calculate emissions from all DMT-TPA plants. Average emission factors are given in Table V-2.

Controlled Emission Factor (E_N) - As discussed in Section III, the best system of emission control for both CO and hydrocarbons is a CO boiler. A CO boiler is 95 percent efficient in removing CO and hydrocarbons. Therefore,

$$E_{N}^{CO} = 0.05 \text{ x } E_{U}^{CO} = 2.37 \text{ 1b CO/ton DMT}$$

$$E_{N}^{HC}$$
 = 0.05 x E_{U}^{HC} = 1.15 lb HC/ton DMT

Table V-2. UNCONTROLLED EMISSION FACTORS FOR HYDROCARBONS AND CO

	Capacity, 10 ⁶ lb/yr	Uncontrolled rate, 1	Emission factor, 1b/ton DMT		
Plant	DMT equivalents	нс	со	нс	СО
Amoco, Decatur	2,131	3,270	4,632	26.88	38.08
Eastman, Kingsport	600	784.6	1,545	22.91	45.11
Hercules, Wilmington	1,300	1,446	4,380	19.48	59.03
Average emission factor				23.09	47.41

Controlled Emission Factor for Designated Pollutants ($E_{111}d$) - As CO is a "Criteria", pollutant it is not regulated under Section 111d of the Clean Air Act. Therefore, E_{111d} or (T_s - T_{nd}) is not calculated for CO emissions.

Similarly, hydrocarbons are also criteria pollutants and not regulated under Section 111d of the Clean Air Act. The organic emissions from the DMT-TPA manufacturing process are mostly acetic acid, methyl acetate or dimethyl ether. These pollutants are not hydrocarbons in the strict sense of the word (i.e., composed solely of carbon and hydrogen), however, they are often classed with hydrocarbon emissions. If they are not classed as hydrocarbons then they will be controlled as designated pollutants under Section 111d of the Clean Air Act. Therefore, both (T_s-T_n) and (T_s-T_{nd}) will be calculated for hydrocarbon emissions.

Estimated Allowable Emissions Under 1975 Regulations (E_S) - Only Illinois has a state standard for CO and hydrocarbons. Therefore, based on the fact that (1) less than 5 percent of the DMT-TPA produced is manufactured in Illinois, (2) the Illinois standard is under litigation, and (3) there are no known plans for constructing more DMT-TPA plants in Illinois, the allowable emission factor (E_S) will be set equal to the uncontrolled emission factor (E_T).

<u>Production Capacity to Replace Obsolete Faciliteis (B)</u> - As P_B represents a simple obsolescence rate, B is calculated by:

$$B = 10*A* P_B$$

and is 1.05×10^6 tons of DMT per year.

<u>Production Capacity</u> to <u>Increase Output (C)</u> - As P_C represents a compound growth rate, C is calculated by:

$$C = A \left[(1 + P_C)^{10}, -1 \right]$$

and is 4.29×10^6 tons of DMT per year.

RESULTS OF MODEL IV

Table V-3 contains the values of all parameters and the results of all calculations for Model IV. The impact of NSPS presented in Table V-3 accounts for the states requiring existing facilities to limit their hydrocarbon emissions in accordance with the NSPS (i.e., $T_S - T_{Nd}$). As such, this represents the maximum emission impact of NSPS. The impact of NSPS for CO and HC applied only to new or modified facilities is also presented in Table V-3 (i.e., $T_S - T_N$).

The emission reduction for CO presented in Table V-3 may seem substantial (120,260 tons/year), but is small compared to the manufacture of other organic chemicals. For example:⁴

Industry	1986 emission reduction for CO with best system of emission control, tons/year
DMT-TPA	120,260
Formaldehyde	386,000
Maleic anhydride	279,800
Acrylonitrile	259,000

Table V-3. PARAMETERS USED IN MODEL IV AND RESULTS OF MODEL IV

						!	Ta	owth	Industr	ial ca	pacity		1	Emissi 000 to	lons, s/year			act, year
Pollutant	ĸ	Units	Eu	E _{111(d)}	E _S	E _N	P _C	P _B	Units/year	A 1975	B 1985	C 1985	T _N 1975	T _N 1985	T _S 1985	T _{Nd} 1985	T _S - T _{Nd} 1985	T _S - T _N 1985
Hydrocarbons	1.0	lb/ton of DMT	23.09	.1.15	23.09	1.15	0.11	0.045	10 ⁶ tons of DMT	2,33	1.05	4.29	26.89	17.84	76.43	3.81	72,620	58,590
co	1.0	lb/ton of DMT	47.41		47.41	2.37	0.11	0.045	10 ⁶ tons of DMT	2.33	1.05	4.29	55.23	36.67	156.93			120,260

The emission reduction expected for hydrocarbons is, on the other hand, larger than the emission reduction expected from other industries. For example: 4

· <u></u>	· · · · · · · · · · · · · · · · · · ·
Industry	1986 emission reduction of HC with best system of emission control, tons/yr
DMT-TPA	58,590
Synthetic fibers	11,300
Polyvinyl chloride	12,000
Phthalic anhydride	17,900

If the HC emissions are regulated as designated pollutants under Section 111d of the Clean Air Act, the impact of NSPS will be even larger - 72,620 tons per year (i.e., T_S - T_{Nd}).

The reason for the large impact on hydrocarbon emissions is that the industry has a high growth rate, 11 percent per year. If this growth rate cannot be sustained over a period of 10 years, then the impact should be less significant.

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- 2. Ibid., p. 16.
- 3. Tax Information on Depreciation. 1976 Edition. Department of the Treasury, Internal Revenue Service, Asset Guideline Class 28.0. Publication No. 534. p. 29.
- 4. Impact of New Source.., Op cit. p. 73.

SECTION VI

MODIFICATION AND RECONSTRUCTION

INTRODUCTION

There are three approaches taken to increase production capacities in the DMT-TPA industry: debottlenecking; parallel production lines; and the addition of new plants.

Debottlenecking is used to identify the production limiting piece of equipment and either modify it for larger throughput or replace it with a larger capacity unit. Every manufacturer uses debottlenecking procedures.

If an increase in production capacity is significant, the manufacturer can add parallel production lines or build a new plant. In discussions with plant managers it was determined that there is no fixed economical plant size. Rather, new plants are built as needed and sized to fit projected demands for the product.

EFFECTS ON EMISSIONS OF MODIFICATIONS AND RECONSTRUCTION

The only facility for which there is sufficient information to predict the effect of modifications and reconstruction on emissions is Amoco's Decatur Plant. The Decatur Plant employs four parallel production lines to oxidize p-xylene to TPA. The last two oxidation units have approximately twice the production capacity of the first two units (see Section II).

The most significant emission point for hydrocarbons and CO is the p-xylene oxidation reactor in which p-xylene is air oxidized to TPA and by-products such as methyl acetate. The inputs to each reactor are p-xylene, acetic acid, a catalyst mix, air, oxygen and a caustic solution. Each reactor is equipped with a high and low pressure absorber to recover p-xylene and acetic acid. These absorbers are wet (water) scrubbing devices. The only other significant emission point is the solvent dehydration tower vent. There is no emission control device on this vent. Production rates and emission rates for each oxidation unit are given in Table VI-1.

As can be seen from Table VI-1, as the production rates for the oxidation units increase, the flow rates through the units increase roughly linearly.

Hydrocarbon emissions from the dehydration tower vent increase in proportion to production rate. Hydrocarbon emissions from the high and low pressure absorbers, on the other hand, stay essentially constant with increases in production rate. This could be the result of increased efficiency of the control devices on the larger units, but the efficiencies are not known.

The emission of CO from the p-xylene oxidation unit is roughly constant with increases in production rate. As the high pressure absorber does not affect CO emissions, this can not be the result of using a more efficient control device. The reason for CO emissions remaining constant with increases in production rate is not known. However, it can be concluded that the emission of CO from the p-xylene oxidation unit depends mainly on the reactor design and is only a weak function of the throughput of the reactor. Similar information for the Hercules or Eastman processes is not available.

Table VI-1. EMISSIONS FROM OXIDATION UNITS AT AMOCO'S DECATUR DMT-TPA PLANT $^{\rm a}$

O xidation unit ^b	Control device	Flow rate, scfm		Emission, 1bs/hour	Production rate 10 ⁶ 1bs/year
No. 1, 2	High pressure absorber	16850	53 990	Acetic acid Methyl acetate	280
			750	СО	
	Low pressure	92	37	Acetic acid	
			14	Methyl acetate	
	Dehydration tower vent	3400	39	Acetic acid	
			58	Methyl acetate	
No. 3	High pressure absorber	37800	63 856	Acetic acid : Methyl acetate	530
			870	СО	,
	Low pressure absorber	343	21 21	Acetic acid Methyl acetate	
	Dehydration tower vent	5700	55 96	Acetic acid Methyl acetate	
No. 4	High pressure absorber	40850	79 856	Acetic acid Methyl acetate	540
			900	CO	
	Low pressure	340	21 21	Acetic acid Methyl acetate	
	Dehydration tower vent	6580	56 96	Acetic acid Methyl acetate	

b_{See Section II.}

It is expected that hydrocarbon emissions should increase in proportion to the production rate of TPA.

From the preceding, CO emissions would appear to increase in proportion to the number of new units coming on line and do not appear to be linearly related to the increase in production rate of the DMT-TPA industry. Unfortunately, there is not enough information on the DMT-TPA manufactuing processes to make these predictions with certainty. However, as the emission impact of NSPS on CO emissions presented in Table V-3 is based on a linear increase in emissions with production rate, the calculated impact should be viewed as being too large.

APPENDIX A

SUMMARY OF EMISSION DATA

INTRODUCTION

The following sections present emission information obtained for each plant during the course of this project. Supplementary information is still to be received from DuPont's Wilmington Plant, but data available from the State of North Carolina was sufficient for the completion of this project.

Data was obtained in one or more of three ways: by site visit; by updates of the Houdry questionnaire; or from permit applications to state air pollution control agencies.

In the following, emission data is presented in its original form. Tables II-1 through II-7 were constructed from this data. Correspondence and telephone conversations required to obtain this information are summarized in Appendix C. Information on control devices is also included in Appendix A.

Where updates of the original Houdry questionnaires were used to obtain emission information, only the changes in the questionnaire are presented. As they may be helpful, flow diagrams of each process are included.

AMOCO CHEMICALS CORPORATION

Emission Information for Amoco's Joliet Plant

Amoco's Joliet Plant was visited to obtain emission information. This information was taken from the company's state permit application files. The following is a trip report for the visit to the Joliet Plant. Figures Λ -1 through Λ -3 are flow diagrams of the TPA, PTA, and DMT unit, respectively.

Trip Report

By D.F. Durocher

Date April 28, 1976

Subject Meeting with Amoco personnel to gather emission information on the Joliet, Illinois and Decatur, Alabama DMT-TPA plants

Attending:

Harry M. Brennan, Coordinator - Air and Water Conservation, Manufacturing Division, Amoco Chemicals

E.V. Smith, Technical Director, Joliet Plant, Amoco W.W. Twaddle, Plant Manager, Joliet Plant, Amoco

Robert E. Flesch, Process Engineer, Joliet Plant, Amoco

During the conversation, the following points were made:

- The Joliet facility has only one production line. The Decatur facility has four production lines.
- A new plant is being constructed on the Cooper River in South Carolina.
- Production capacity at Joliet is 133 x 10⁶ pounds of crude terephthalic acid a year. The normal running time for the TPA unit is 88 percent of the year; 88 percent for the PTA unit; and 90 percent for the DMT unit.
- The following emission information is the most up-to-date information available for the TPA unit (see Figure A-1).

```
CO
                   390 1b/hr
     co_2
                 1,292
                42,840
     N_2
     02
                 1,123
                    42
Acetic acid
                    42
     H<sub>2</sub>0
                    20
Methyl acetate
Device A, absorber gas/liquid; inlet flow:
Total flow
                47,300 lb/hr made up of:
     N_2
                 95-98 wt. %
                  0-2
     0_2
                  0-1
     H_2O
                  0 - 3
Acetic acid
1000 lb/hr of makeup water is needed.
Stream #2 (vent header absorber):
                 1,090 lb/hr
     N_2
Acetic acid
                     1
                    10
     H20
Stream #3 (dehydration tower):
                   148 1b/hr
Acetic acid
     H20
                 9,752
Stream #4 (dryer/scrubber):
Particulate
                    15 1b/hr
Inlet loading is not known.
Stream #5 (solids drumming station vent):
                 2,000 1b/hr
     N_2
Acetic acid
                     2
                   607
     02
Stream #6 (gas dryer - represents small slipstream from
           device A):
                 1,160 lb/hr
                    23
```

Stream #1:

Stream #7 (gas dryer - represents small slipstream device A; mostly for transport of solids):

N₂ 4,210 1b/hr O₂ 86 H₂O 9 Acetic acid 13

- Due to the low vapor pressure of p-xylene, the 2.2×10^6 gallon storage tank just has a vent. This emits 2.67 lb/hr of hydrocarbons (as methane). There are 28 tank turnovers per year.
- The methanol storage tanks hold 126,000 gallons each. Emissions are 0.60 lb/hr from each of four tanks. There are 26 turnovers per year for each tank.
- The acetic acid tank holds 70,000 gallons. This is a fixed-roof tank with an average emission rate of 5 lb/hr. There are 19 turnovers per year.
- The following emission information is the most up-to-date information available for the PTA unit (see Figure A-2):
 - Stream #1 (vent):

 CO_2 84 1b/hr Particulate 25

- Stream #2 (vent on feed slurry):

 $\begin{array}{ccc} \text{CO}_2 & 1 \text{ 1b/hr} \\ \text{N}_2 & 3 \\ \text{H}_2\text{O} & 7 \\ \end{array}$ Particulate 0.1

Process weight for this stream is 41,000 lb/hr water and PTA.

- Stream #3 (feed tank to centrifuge):

 H_2^0 850 lb/hr Particulate 0.001

Stream #4 (dryer/scrubber):

co2 30 1b/hr N_2 150 800

Particulate 0.1

Stream #5 (product day tanks):

135 1b/hr co_2 780 N_2 Particulate 25

- Stream #6 unknown
- Stream #7 (hot oil furnace):

150 1b/hr 1,098 7 H₂0 261

(unit is fired on natural gas).

- The following emission information is the most up-to-date information available for the DMT unit (see Figure A-3):
 - Stream #1 (feed vent):

1.1 lb/hr co_2 160 1,010 Particulate 10

Stream #2 (steam ejector):

698 1b/hr H_2O Particulate 1 15 N_2

Stream #3 (scrubber):

H₂0 30 lb/hr 1

Particulate

The efficiency of the scrubber is not known.

- Stream #4 (solids drumming station vent)

Particulate

0.2 lb/hr

- Stream #5 (flaker/briquetter vent):

Particulate

10 lb/hr

- Stream #6 (tank vent):

MeOH

20 lb/hr

Dimethyl ether

500

This stream represents waste products from the DMT reaction.

- Stream #7 (solids drumming station vent):

Particulate

5 1b/hr

- Both of Amoco's plants are phasing out DMT production. Production capacity is increased to match sales growth as the need arises. The historical trend has been to go to larger plants (e.g., Joliet is smaller than the Decatur Plant which is smaller than the Cooper River Plant). Emissions vary from plant to plant and from unit to unit within a plant (see Decatur information).
- The reactors are explosively lined with titanium and have a long (greater than 10 years) operating life.
- The metals content of PTA is very important. Amoco's PTA has less than 15 ppm trace metals and is considered extremely high quality.
- It was noted that smaller plants tend to have higher emissions. There appears to be no economical plant size.
- Production is down approximately 50 percent this year, but is expected to rise quite rapidly. A 7 to 9 percent growth rate is expected over the next several years.
- Crude TPA is stored and transferred to the DMT/PTA units by pushing with CO₂.



Amoco Chemicals Corporation

Post Office Box 941 Joliet, Illinois 60434

May 11, 1976

Mr. Donald F. Durocher Senior Scientist Environmental Engineering Department GCA/Technology Division Burlington Road Bedford, Massachusetts 01730

Dear Don:

Attached is the emission control equipment design information you requested in your April 29, telephone conversation with Bob Flesch. All control equipment for the Terephthalic Acid, Purified Terephthalic Acid (PTA), and Dimethylterephthalate (DMT) process units is included.

If you have any questions, feel free to call me.

Yours very truly,

w.w. Twaddle_

W. W. Twaddle Plant Manager

REF/kw

attachments

JT-454-76; A32.203

AMOCO CHEMICALS CORPORATION JOLIET PLANT

EMISSION CONTROL EQUIPMENT

TEREPHTHALIC ACID PROCESS UNIT

1. Vent Source No. 1, High Pressure Absorber

Made by:

Wyatt Metal and Boiler Works, Inc.

Design:

Absorber tower with trays

Pressure:

110-160 psig

Temperature:

110-190°F

Height:

22 feet

Diameter:

3.5 feet

Construction: Stainless steel

Vent Source No. 2, Vent Header Absorber

Made by:

Wyatt Metal and Boiler Works, Inc.

Design:

Spray tower

Pressure:

Atmospheric

Temperature:

100-150°F

Height:

20 feet

Diameter:

1.5 feet

Construction: Stainless steel

3. Vent Source No. 4, Dryer Scrubber

Made by:

Nooter Corporation

Design:

Spray tower

Pressure:

Atmospheric

Temperature:

90-130°F

Height:

22.5 feet

Diameter:

1.5 feet

Construction: Stainless steel

EMISSION CONTROL EQUIPMENT

Page 2

PURTETED TEREPHTHALIC ACID PROCESS UNIT (PTA)

1. Vent Source No. 4, Dryer Scrubber

Made by:

Wildman Boiler and Tank Company

Dosign:

Spray tower

Pressure;

Atmospheric

Temperature:

165-185°F

Height:

10 feet

· Diameter

2.5 feet

Construction: Stainless steel

DIMETHYLTEREPHTHALATE PROCESS UNIT (DMT)

1. Vent Source No. 3, Distillation Tower Ejector Exhaust Scrubber

Design:

Spray tower

Pressure:

Atmospheric

Temperature:

100-120°F

Height:

21.5 feet

Diameter:

1.7 feet

Construction: Carbon steel

REF/kw 05/11/76

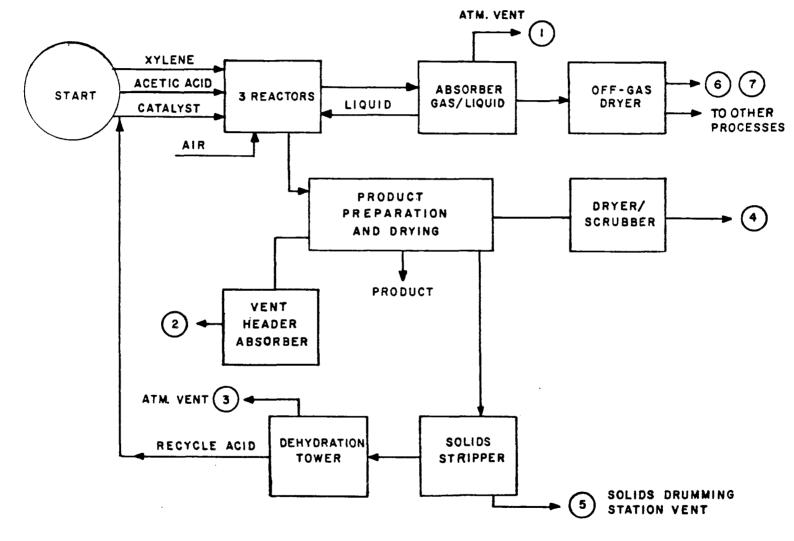


Figure A-1. Flow diagram of Amoco's TPA unit at the Joliet Plant

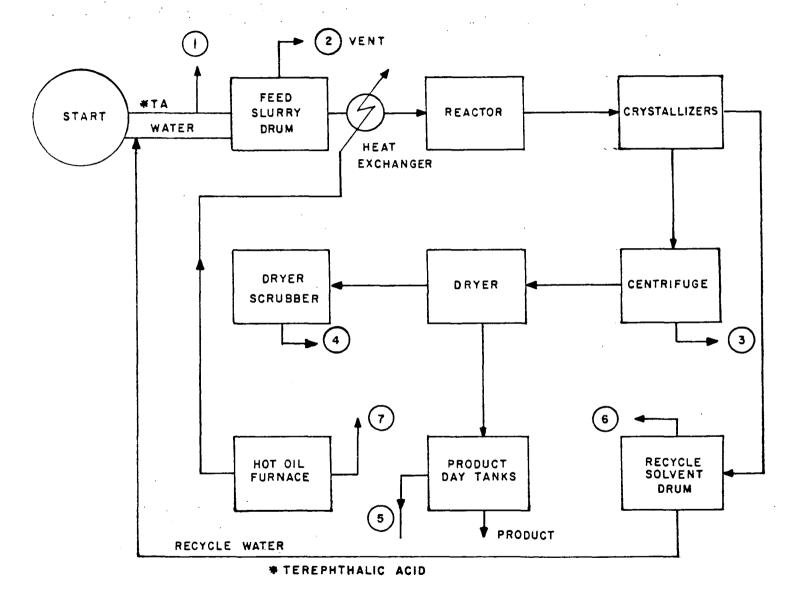


Figure A-2. Flow diagram of Amoco's PTA unit at the Joliet Plant

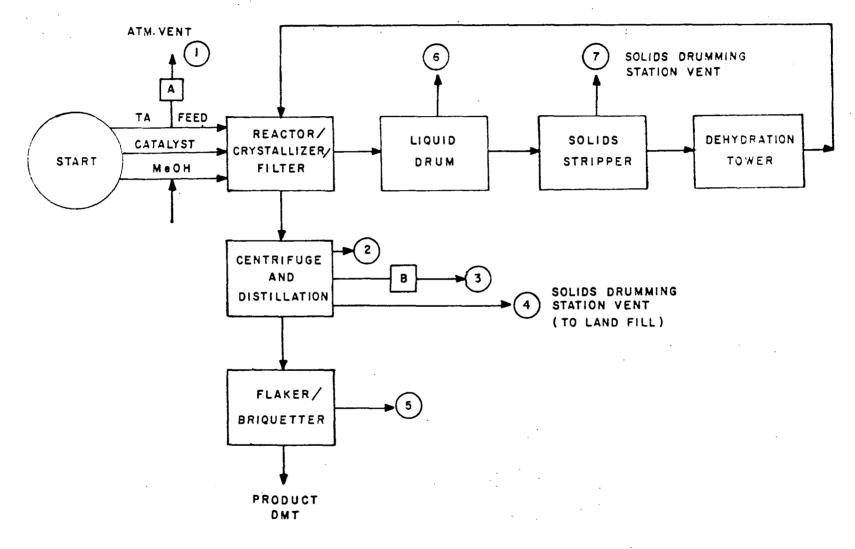


Figure A-3. Flow diagram of Amoco's DMT unit at the Joliet Plant

Emission Information From Amoco's Decatur Plant

Personnel at the Decatur Plant were asked to update the information contained in the original Houdry questionnaire. The new information was returned June 3, 1976. The data was taken from operating permit applications and represents the most up-to-date information available.



Amoco Chemicals Corporation

200 East Randolph Drive Chicago, Illinois 60601

June 1, 1976

Dr. Donald F. Durocher GCA/Technology Division Burlington, Massachusetts 01730

Dear Sir:

Enclosed is the update of information concerning the air emissions from our Decatur, Alabama TA-PTA-DMT units.

These are the data from our operating permit application.

Yours very truly,

H. M. Brennan
Coordinator
Air & Water Conservation

HMB/kn

Enclosure

- No. 1 Oxidation Unit (90% operating factor)
- Λ. Production Rate 35,500 lb Terephthalic Acid/hr (280 million pounds per year)
- B. Process Weight Rates -

Material	Average lb/hr
Paraxylene	24,250
Acetic Acid	3,760
Catalyst Mix	69
Λir	92,050
0xygen	5,830
Caustic (50%)	776

- C. Emission Points (see sketch)
 - (1) High Pressure Absorber Valve Tray Scrubbing Tower (Efficiency not known)

Vent Rate = 16,850 scfm

Temp. = 112° F Press. = Atm.

Pollutants	1b/hr	
Acetic Aci	.d	53
Methyl Ace	etate	990
Carbon Mon	oxide	750

(2) Low Pressure Absorber - Spray Tower (Efficiency not known)

Vent Rate = 92 scfm

Temp. = 120° F Press. = Atm.

Pollutants 1b/hr
Acetic Acid 37
Methyl Acetate 14

(3) Silo Dust Collector - Bag Filer
(Efficiency not known)

Vent Rate* = 600 scfm

Temp. = 100° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.4 (design estimate)

*600 scfm is an occasional discharge. No venting occurs when the primary conveyance system (mechanical conveyer) is in operation. The backup system (pneumatic conveyor) causes the venting of 600 scfm when it is in operation. (4) Dehydration Tower Vent - No Cleaning Device

Vent Rate = 3,400 scfm

Temp. = 215° F Press. = Atm.

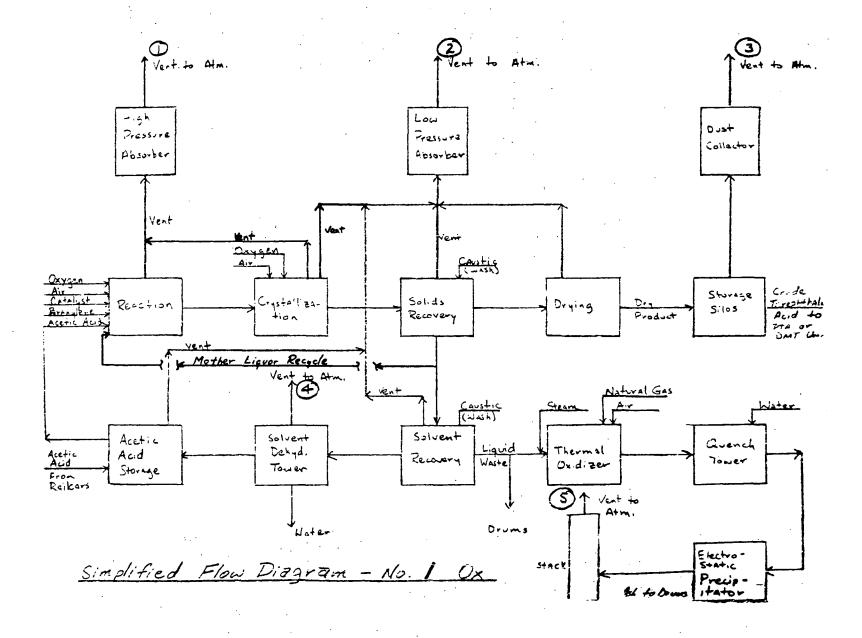
Pollutants	1b/hr
Acetic Acid	39
Methyl Acetate	58

(5) Electrostatic Precipitator - Measured eff. to be 95.7% for (clean thermal oxidizer particulates flue gas)

Vent Rate = 17,800 scfm

Temp. = 610° F Press. = Atm.

Pollutants	1b/hr
Particulates	7.0
Carbon Monoxide	23.8
Hydrocarbons	23.8
Sulfur Oxides	0.1
Nitrogen Oxides	7.5



No. 2 Oxidation Unit - (90% operating factor)

- Λ. Production Rate 35,500 1b Terephthalic Λcid/hr (280 million pounds per year)
- B. Process Weight Rates -

<u>Material</u>	Average lb/hr
Paraxylene	24,250
Acetic Acid	3,760
Catalyst Mix	69
Air	92,050
Oxygen	5,830
Caustic (50%)	776

- C. Emission Points -
 - (1) High Pressure Absorber Valve Tray Scrubbing Tower (Efficiency not known)

Vent Rate = 16,850 scfm

Temp. =
$$112^{\circ}$$
F Press. = Atm.

Polluta	1b/hr	
Acetic	Acid	53
Methy1	Acetate	990
Carbon	Monoxide	750

(2) Low Pressure Absorber - Spray Tower (Efficiency not known)

Vent Rate = 92 scfm

Temp. =
$$120^{\circ}$$
F Press. = Atm.

<u>Pollutants</u>	1b/hr
Acetic Acid	37
Methyl Acetate	14

(3) Silo Dust Collector - Bag Filter
(Efficiency not known)

Vent Rate* = 600 scfm

Temp. =
$$100^{\circ}$$
F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.4 (design estimate)

*600 scfm is an occasional discharge. No venting occurs when the primary conveyance system (mechanical conveyor) is in operation. The backup system (pneumatic conveyor) causes the venting of 600 scfm when it is in operation. (4) Dehydration Tower Vent - No cleaning device

Vent Rate = 3,400 scfm

Temp. = 215° F Press. = Atm.

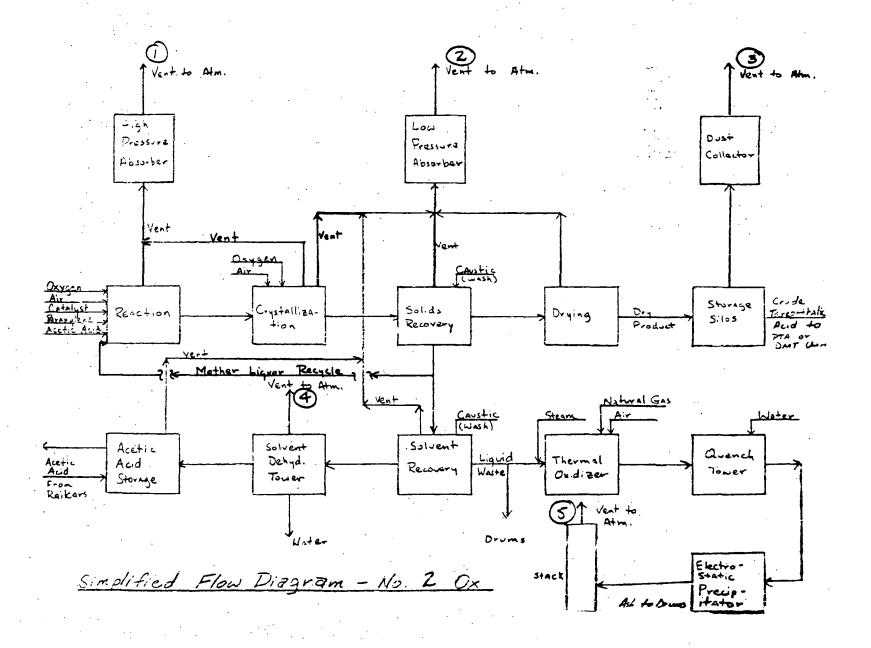
Pollutants 1b/hr
Acetic Acid 39
Methyl Acetate 58

(5) Electrostatic Precipitator - Measured eff. to be 95.7% for (clean Thermal Oxidizer particulates Flue Gas)

Vent Rate = 17,800 scfm

Temp. = 610° F Press. = Atm.

<u>Pollutants</u>	1b/hr
Particulates	7.0
Carbon Monoxide	23.8
Hydrocarbons	23.8
Sulfur Oxides	0.1
Nitorgen Oxides	7.5



- No. 3 Oxidation Unit (90% operating factor)
- A. Production Rate 67,225 lb Terephthalic Acid/hr (530 million pounds per year)
- B. Process Weight Rates -

Material	Average lb/hr
Paraxylene	46,050
Acetic Acid	7,140
Catalyst Mix	132
Air	176,800
Oxygen	14,060
Caustic (50%)	1,150
N ₂ Vent = 38,500*.792 = 30,500	
Vent $0_2 = 30,500*.035/.93 = 1,148$	3
Vent = 30,500/.93 = 32,800	
$0_2 \text{ Rx} = 46,050*1.06*379/32/60 = 9,635$	
Total $0_2 = 9,635 + 1,148$	= 10,783
Feed $0_2 = 38,500*208$	8,008
2	2,775 scfm
$\#/H_2O_2 = 2,775*32/379*60$	= 14,060
#/N ₂ Air 38,500*29/379*60	755 - 176,755

C. Emission Points -

CO

(1) High Pressure Absorber - Valve Tray Scrubbing Tower
(Efficiency not known)

Vent Rate = 37,800 scfm

Temp. = 120 Press. = Atm.

Pollutants 1b/hr
Acetic Acid 63
Methyl Acetate 856

(2) Low Pressure Absorber - Spray Tower
(Efficiency not known)

870

Vent Rate = 343 scfm

Temp. = 120 Press. = Atm.

Pollutant 1b/hr
Acetic Acid 21
Methyl Acetate 21

(3) Silo Dust Collector - Bag Filter (Effiency not known)

Vent Rate = 2,000 scfm

Temp. = 225° F

Press. = Atm.

Pollutant

lb/hr

Terephthalic Acid 0.1

(4) Dehydration Tower Vent - No gas cleaning device

Vent Rate = 5,700 scfm

Temp. = 214° F

Press. = Atm.

Pollutants

1b/hr

Acetic Acid

55

Methyl Acetate

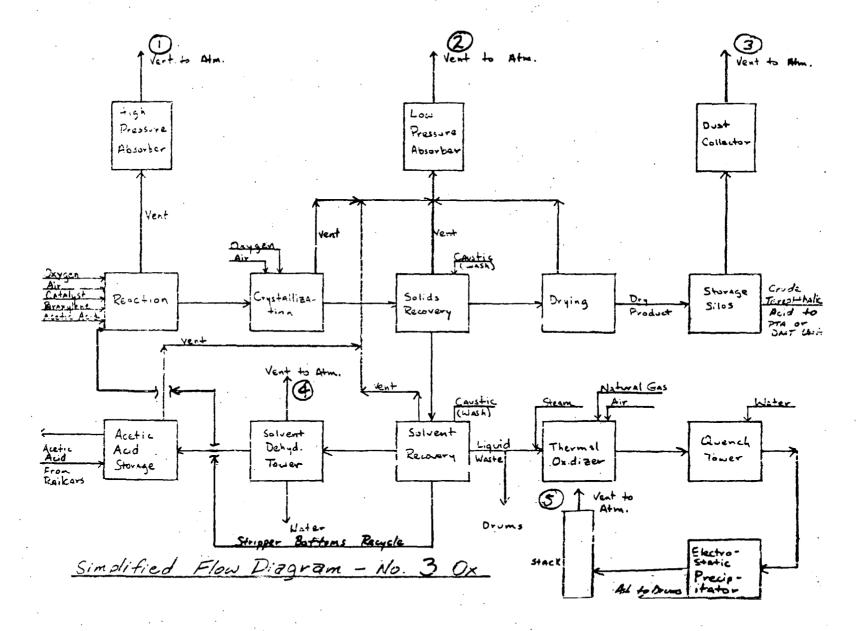
96

(5) Thermal Oxidizer/ESP - Measure efficiency to be approximately 75%

Vent Rate = 12,700 scfm

Temp. = 680° F Press. = Atm.

Pollutants	1b/hr
Particulates	16
Carbon Monoxide	24.6
Hydrocarbons	24.6
Nitrogen Oxide	2.0
Sulfur Dioxide	0.1



- No. 4 Oxidation Unit (90% operating factor)
- A. Production Rate 68,500 1b Terephthalic Acid/hr (540 million pounds per year)
- B. Process Weight Rate -

Material Average lb/h		r	
Paraxylene	46,900	(budget)	
Acetic Acid	7,270	(")	
Catalyst Mix	196	(")	
Air is the State of the State o	222,800	(per D.K.R.)	
Oxygen	0	("	
Caustic (50%)	940	(budget)	

Vent $N_2 = 48,491 \text{ scfm*.792} = 38,400 \text{ scfm}$

Vent $0_2 = 38,400*.015/.94 = 612 \text{ scf}$

Vent = 40,851

 $0_9 \text{ Rx} = 46,900/60/32*379*1.03 = 9,535$

Enriched Air = 38,400 + 612 + 9,535 = 48,550 scfm

$$(612 + 9.538)/48.550 = .209$$
 (.. use air)

#/hr = 48,550*29/379*60 = 222.8M

- C. Emission Points -
 - (1) High Pressure Absorber Valve Tray Scrubbing Tower (Vents from absorber & (Efficiency not known) from off gas dryer purge)

Vent Rate = 40,850 scfm

Temp. = 120 Press. = Atm.

<u>Pollutants</u>	lb/hr
Acetic Acid	79
Methyl Acetate	856
CO .	900

(2) Low Pressur Absorber - Spray Tower (Efficiency not known)

Vent Rate - 340 scfm

Temp. = 118 Press. = Atm.

Pollutants 1b/hr
Acetic Acid 21
Methyl Acetate 21

(3) Silo Dust Collector - Bag Filter
(Efficiency not known)

Vent Rate = 1,985 scfm

Temp. = 275° F P

Press. = Atm.

Pollutant

1b/hr

Terephthalic Acid 0.1

(4) Dehydration Tower Vent - no gas cleaning device

Vent Rate = 6,580 scfm

Temp. = 214° F

Press. = Atm.

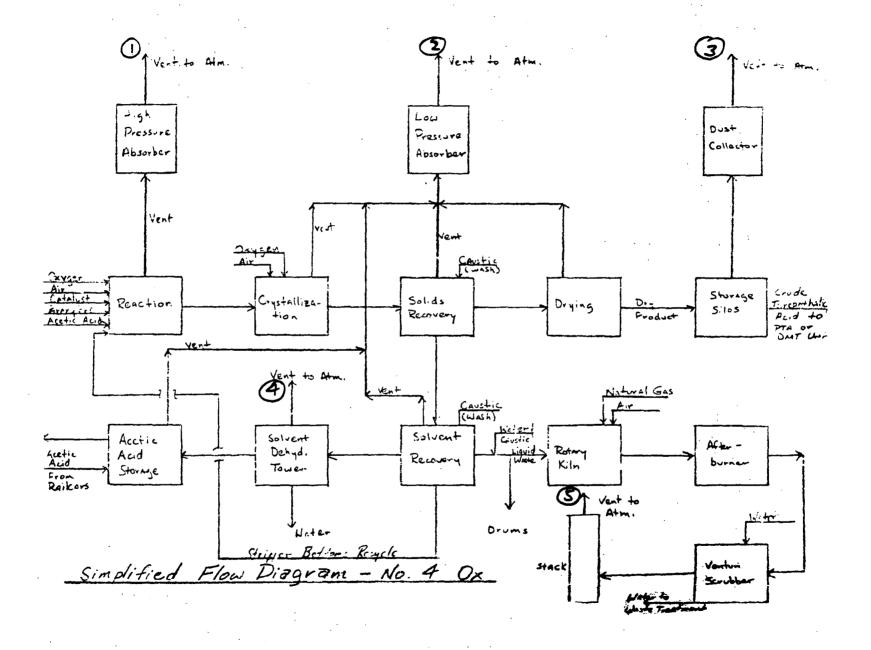
Pollutants 1b/hr
Acetic Acid 56
Methyl Acetate 96

(5) Rotary Kiln Furnace/Venturi Scrubber - Efficiency not known

Vent Rate - 19,400 scfm

Temp. = 175° F Press. = Atm.

Pollutants	1b/hr
Particulates	21
Carbon Monoxide	29.1
Hydrocarbons	29.1
Nitrogen Oxides	2.3
Sulfur Dioxide	0.1



- No. 1 PTA Unit (90% operating factor) (Continuous Crystallization)
- A. Production Rate 22,800 lb Purified Terephthalic Acid/hr (180 million pounds per year)
- B. Process Weight Rates -

<u>Material</u>	Average lb/hr	
Crude Terephthalic Acid	23,540	
Process Water	83,460	
Hydrogen	127	

- C. Emission Points
 - (1) Feed Slurry Tank Vent Spray in vent (Efficiency not known)

Vent Rate = 46 scfm

Temp. = 208° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 1.3

(2) Crystallizer Vent Scrubber - Turbulent Contact Absorber (Efficiency not known)

Vent Rate - 12,900

Temp. = 212 Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 11.6

(3) Dryer Vent Scrubber - Spray Tower (Efficiency not known)

Vent Rate = 220 scfm

Temp. = 200° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.01

(4) Atmospheric Centrifuge Feed Tank Vent - No gas cleaning device

Vent Rate = 1,100 scfm

Temp. = 212° F Press. - Atm.

Pollutant 1b/hr

Terephthalic Acid 4.7

(5) *Day Tank Dust Collectors - Bag Filters
 (5 day tanks each w/dust (Efficiency not known)
 collector)

Vent Rate = 600 scfm

Temp. = 212° F Press. = Atm.

Pollutant

1b/hr

Terephthalic Acid 0.0431

(6) **Silo Dust Collectors - Bag Filters (Efficiency not known)
 (3 silos each w/dust
 collector)

Vent Rate = 600 scfm

Temp. = 100° F Press. = Atm.

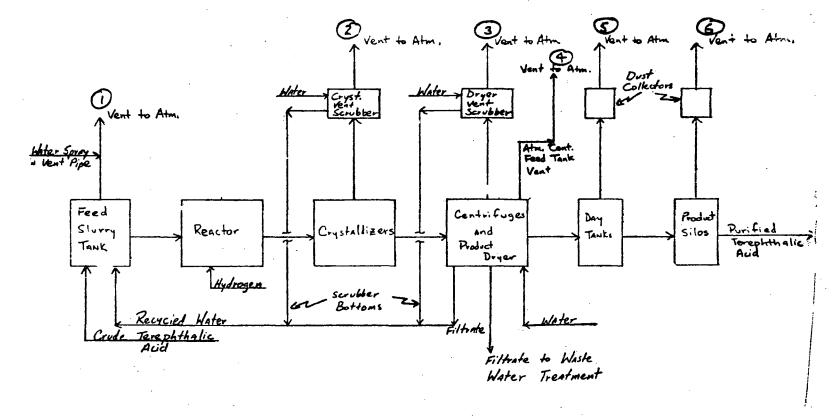
Pollutant

1b/hr

Terephthalic Acid 0.0062

^{*}Product is transferred to only one day tank at a time.

^{**}Product is transferred to only one silo at a time, and for only 8 hours a day (1/3 of the unit's operating time).



Simplified Flow Diagram - No. 1 PTA

- No. 2 PTA Unit (90% operating factor) (Continuous Crystallization)
- A. Production Rate 22,800 lb Purified Terephthalic Acid/hr (180 million pounds per year)
- B. Process Weight Rates -

Material	Average lb/h
Crude Terephthalic Acid	23,540
Process Water	83,460
Hydrogen	127

- C. Emission Points
 - (1) Feed Slurry Tank Vent Spray in vent pipe (Efficiency not known)

Vent Rate = 46 scfm

Temp. - 208°F Press. - Atm.

Pollutant 1b/hr

Terephthalic Acid 1.3

(2) Crystallizer Vent Scrubber - Venturi Scrubber (Efficiency not known)

Vent Rate = 19,000

Temp. = 215° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 1.8

(3) Dryer Vent Scrubber - Spray Tower (Efficiency not known)

Vent Rate = 365 scfm

Temp. = 200° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.002

(4) *Day Tank Dust Collectors - Bag Filters
 (3 day tanks each with a (Efficiency not known)
 dust collector)

Vent Rate = 600 scfm

Temp. = 100° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.0326

*Product is transferred to only one day tank at a time.

(5) *Silo Dust Collectors - Bag Filters
 (3 silos each with a (Efficiency not known)
 dust collector)

Vent Rate = 600 scfm

Temp. = 100° F

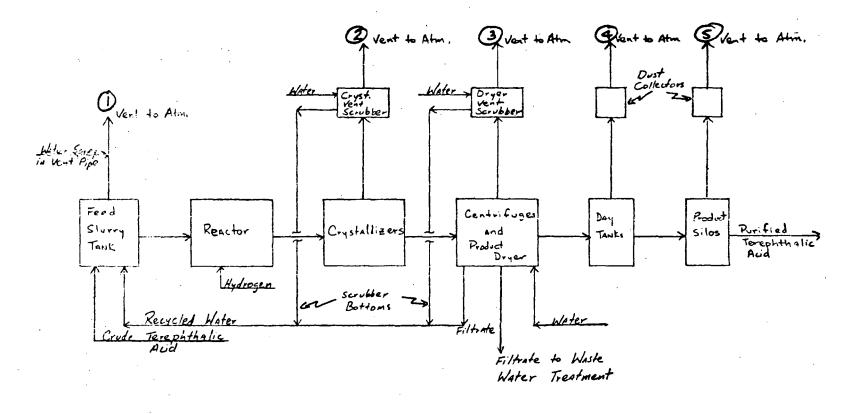
Press. = Atm.

Pollutant

1b/hr

Terephthalic Acid 0.0311

^{*}Product is transferred to only one silo at a time, and for only 8 hours a day (1/3 operating time of unit).



Simplified Flow Diagram - No. 2 PTA

- No. 3 PTA Unit (90% operating factor) (Continuous Crystallization)
- A. Production Rate 63,400 lb Purified Terephthalic Acid/hr (500 million pounds per year)
- B. Process Weight Rates -

 Material
 1b/hr

 Crude Terephthalic Acid
 65,700

 Water
 233,000 (22% T.S.)

 Hydrogen
 25

- C. Emission Points -
 - (1) Feed Slurry Vent Water Spray in vent pipe (Efficiency not known)

Vent Rate = 110 scfm

Temp. = 208° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 5.0

(2) Crystallizer Vent Scrubber - Venturi Scrubber (Efficiency not known)

Vent Rate = 22,700 scfm

Temp. = 218° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 9.5

(3) Dryer Vent Scrubber - Spray Tower (Efficiency not known)

Vent Rate = 1,270 scfm

Temp. = 200° F Press. - Atm.

Pollutant lb/hr

Terephthalic Acid 0.04

(4) Atmospheric Centrifuge Feed Tank Vent - Water Spray in vent pipe (Efficiency not known)

Vent Rate = 4,650 scfm

Temp. = 215° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 2.

(5) Day Tank Dust Collectors - Bag Filters (4 day tanks each with a (Efficiency not known) dust collector)

Vent Rate* = 2,630 scfm

Temp. = 100° F Press. = Atm.

Pollutant lb/hr

Terephthalic Acid 0.1 (est.)

Vent Rate** = 2.630 scfm

Temp. = 100° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.1 (est.)

(7) Mother Liquor Flash Oven Vent - no gas cleaning device (OPEN TOP TANK - CAN'T SAMPLE)

Vent Rate = 5,500 scfm

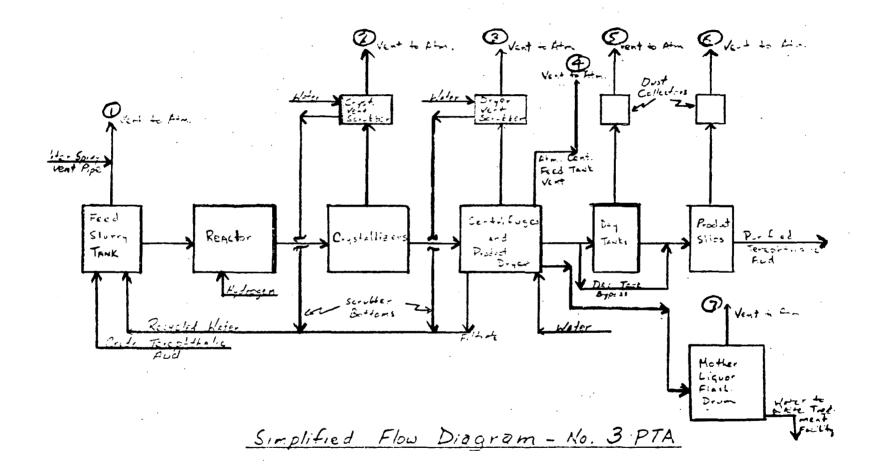
Temp. -212° F Press. = Atm.

Pollutant lb/hr

Terephthalic Acid 1.0 (est.)

^{*}Dry tanks are used on an infrequent basis at No. 3 PTA. They are used mainly when off-spec product is made. It is during this time that the fluidizing rate is 2,630 scfm.

^{**}The majority of the time, product is transferred directly to the silos from the dryer. When this occurs this fluidizing rate is continuous.



- No. 4 PTA Unit (90% operating factor) (Continuous Crystallization)
- A. Production Rate 63,400 lb Purified Terephthalic Acid/hr (500 million pounds per year)
- B. Process Weight Rates -

Material	<u>16/hr</u>
Crude Terephthalic Acid Water	65,700 233,000 (22% T.S.)
llydrogen	25

- C. Emission Points -
 - (1) Feed Slurry Vent Water Spray in vent pipe (Efficiency not known)

Vent Rate = 110 scfm

Temp. = 208° F Press. = Atm.

Pollutant 1b/hr
Terephthalic Acid 5.0

(2) Crystallizer Vent Scrubber - Venturi Scrubber (Efficiency not known)

Vent Rate = 28,200 scfm

Temp. = 219° F Press. = Atm.

Pollutant 15/br
Terephthalic Acid 1.7

(3) Dryer Vent Scrubber - Venturi Scrubber (Efficiency not known)

Vent Rate = 2,940 scfm

Temp. = 208° F Press. = Atm.

Pollutant 1b/hr
Terephthalic Acid 0.1

(4) Atmospheric Centrifuge Feed Tank Vent - Water Spray in vent pipe (Efficiency not known)

Vent Rate = 4,650 scfm

Temp. = 220° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.3

(5) Day Tank Dust Collectors - Bag Filters (2 day tanks each with a (Efficiency not known) dust collector)

Vent Rate* = 1,630 scfm

Temp. = 275° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.1

(6) Silo Dust Collectors - Bag Filters (8 silos each with a (Efficiency not known) dust collector)

Vent Rate** = 1,630 scfm

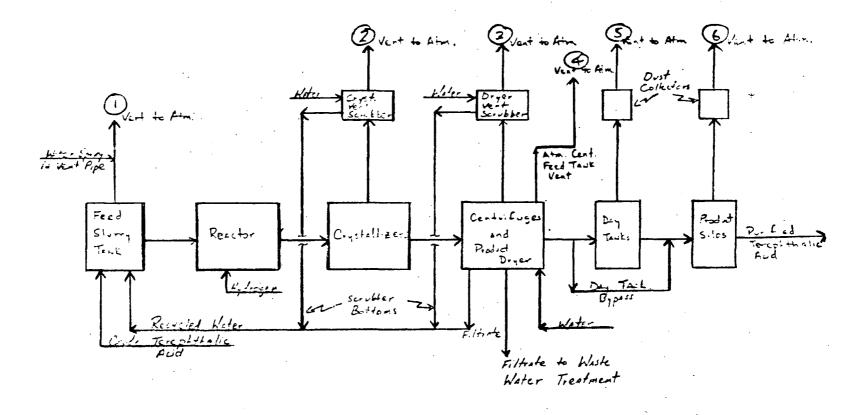
Temp. = 275° F Press. = Atm.

Pollutant 1b/hr

Terephthalic Acid 0.1

^{*}Day Tanks are bypassed during most of the normal operating time. They are used mostly during start-up and when off-spec product is made. During these times the vent rate is 1,630 scfm.

^{**}Product is normally transferred from the dryer to the silos, bypassing the day tanks. During this time the vent rate is contanuous at 1,630 scfm.

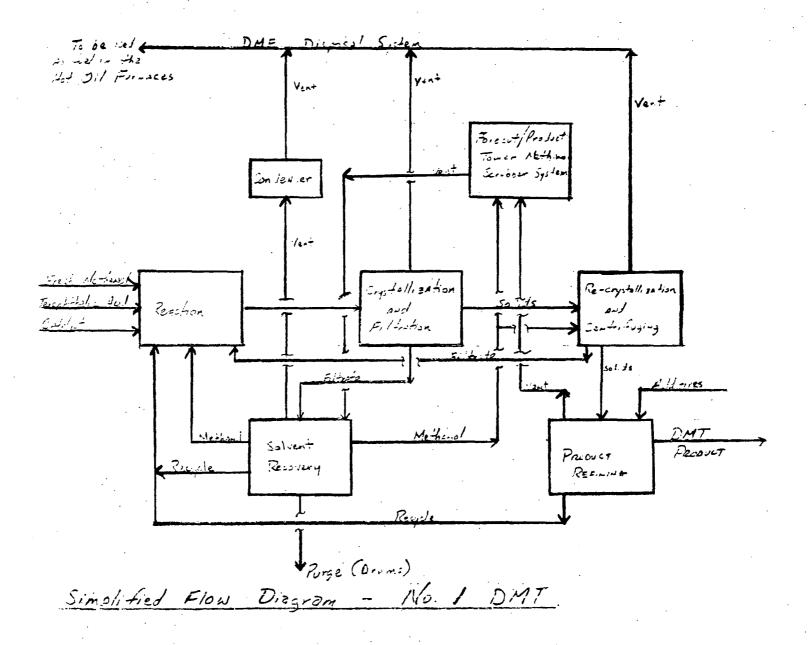


Simplified Flow Diegram - No. 4 PTA

- No. 1 Ester (DMT) Unit (94% operating factor)
- A. Production Rate 14,600 lbs Dimethyl Terephthalate/hr (120 million pounds per year)
 - B. Process Weight Rates -

Material	Average lb/hr
Crude Terephthalic Acid	12,800
Methanol	6,750 (0.45 consumption-budget)
Catalyst	0.51
Additives	0.26

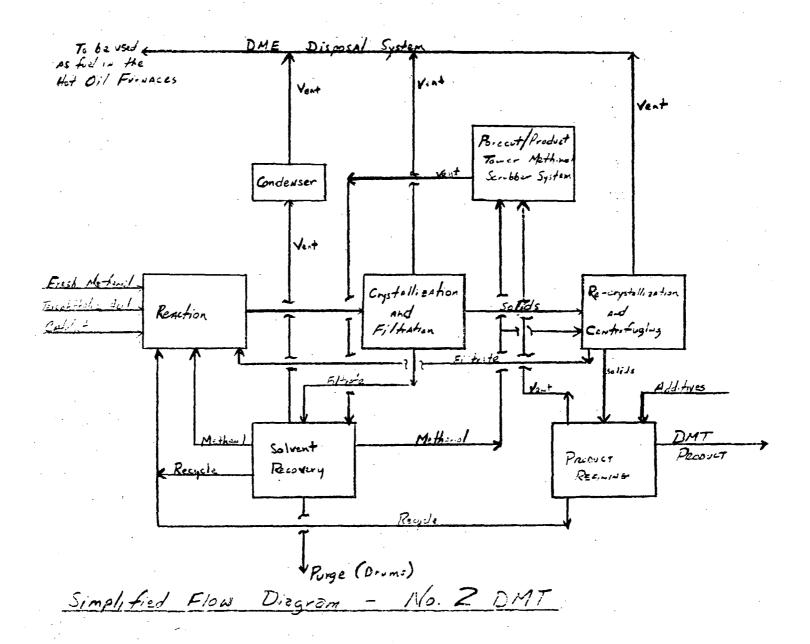
C. Emission Points - There are no longer any points of emissions at the DMT units.



- No. 2 Ester (DMT) Unit (94% operating factor)
- A. Production Rate 14,600 lb Dimethyl Terephthalate/hr (120 million pounds per year)
- B. Process Weight Rates -

Material	Average lb/hr
Crude Terephthalic Acid	12,800
Methanol	6,750 (0.45 consumption-budget)
Catalyst	0.51
Additives	0.26

C. Emission Points - There are no longer any points of emission at the $$\operatorname{DMT}$$ units.



Emission Information From State Agencies

Emission information was received from the State of Alabama. This information, presented in the following, was taken from permit applications filed by the Decatur Plant in 1974. The State of Illinois does not give out information contained in permit applications.

It should be noted that the information received from the State of Alabama is at odds with the information received from the Decatur Plant. For example, the CO emissions from oxidation units #1 and #2 are much lower in the state permit forms than the CO emissions data received from the Decatur Plant. In fact, the CO emission data from the state would predict a linear increase in CO emissions with production rate, while the emissions data from the Decatur Plant implies that CO emissions are independent of production rates (see Section VI). The reason for this discrepancy is not known. The newer permit data sent by the Decatur personnel will be used in this report.

manual (3)

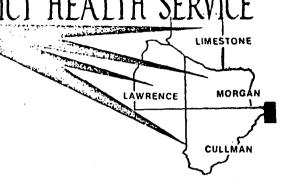
BETTY W VAUGHAN M D DISTRICT MEDICAL DIRECTOR

> 6 W JAMES BUSINESS ADMINISTRATOR

TRI-COUNTY, DISTRICT HEALTH SERVICE

MORGAN COUNTY HEALTH DEPARTMENT P.O. BOX 850 DECATUR. ALABAMA 35601 TELEPHONE: 353-7021

April 21, 1976



Mr. Peter Spawn G.C.A. - Technology Division Burlington Road Bedford, Massachusetts 01730

Dear Mr. Spawn:

Enclosed is a summary of emission data concerning the production of terephthalic acid in our area. Also, I have included a copy of the current Morgan County Air Pollution Control Rules and Regulations.

If you have any questions or we can be of further help please write or call Dan Seaver at (205) 353-7021.

Sincerely,

Paul E. Saywell, Jr.

District Programs Director

Division of Air Pollution Control

PES: js

Enclosures

1 P.T.A. Unit

	Particulate lbs./hr.	Process Wt. Rate lbs./hr.
Feed Slurry Tank Vent (estimate)	1.3	·
*Dryer Scrubber Vent	.01	145,666 T.A. & Water
*Atmospheric Centrifuge Feed Tank Vent	4.7	105,000 T.A. & Water
*Crystallizer Scrubber Vent	11.6	79,860 T.A. & Water
Day Tank Bag Filter Vent (estimate)	.3	330526
Silo Bag Filter Vent (estimate)	3	
Total	18.2	

Controls

Crystallization - Wet Scrubber

Dryer Vent - Wet Scrubber

Feed Slurry Tank - Water Spray in Vent Pipe

Atmospheric Centrifuge - Water Spray in Vent Pipe

2 P.T.A. Unit

	Particulate lbs./hr.	Process Wt. Rate 1bs./hr.
Feed Slurry Tank Vent (estimate)	1.3	
*Dryer Scrubber Vent	.002	97,000 T.A. & Water
*Crystallizer Vent Scrubber	1.8	104,500 T.A. &
Day Tank Bag Filter Vent (estimate)	.3	201,500 Water
Silo Bag Filter Vent (estimate)	. 3	
Total	3.7	
Dryer Vent - Wet Scrubber		
Crystallizers - Venturi Scrubber	·	

A - 45

3 P.T.A. Unit

		Process Wt. Rate 1bs./hr.
Feed Slurry Vent (estimate)	5.0	
*Dryer Scrubber Vent	.04	265,700 T.A. & Water
*Atmospheric Centrifuge Feed Tank	3.0	274,460 T.A. & Water
*Crystallizer Scrubber Vent	21.4	356,000 T. A. & Water
Storage Tanks (estimated)	.1	
Mother Liquor Flash Drum (estimated)	. 1.0	
То	tal 30.54	

Controls

Crystallizers

- Wet Scrubber

Dryer

- Wet Scrubber

Atmospheric Centrifuge - Water Spray in Vent Pipe

4 P.T.A. Unit

		Particulate lbs./hr.	Process Wt. Rate lbs./hr.
Feed Slurry Vent (estimate)		5.0	
Dryer Scrubber Vent		0.1	277,000 T.A. & Water
Crystallizer Vent Scrubber		1.7	311,400 T.A. & Water
Atmospheric Centrifuge Feed Tank		.3	303,000 T.A. & Water
Storage Tank Bag Filters		1	
	Total	7.2	

Controls

Crystallizers

- Wet Scrubber

Dryer

- Wet Scrubber

Atmospheric Centrifuge - Water Spray in Vent Pipe

1 Ester Unit

Particulates Process Wt. 1bs./hr. Rato 1bs./hr.

*Mother Liquor Drum Vent Condenser

.006

18,860 T.A. & Methanol

2 Ester Unit

Identical To # 1

· ·	# 1 Oxidation Unit	225 X 10 ⁶	lbs./yr. crude	T.A.
High Pressure Absorber (Scrubber)		cetic Acid ethyl Acetate	282 lbs./hr. 82 lbs./hr.	
		0.	460 lbs./hr.	
Low Pressure Absorber	Ac	cetic Acid	80 lbs./hr.	in t
(Scrubber)	· Me	ethyl Acetate	16 lbs./hr.	
Dehydration Tower Vent	Ac	etic Acid	46 lbs./hr.	tudies
•	Мо	ethyl Acetate	36 lbs./hr.	es
Storage Silos	T.	.A. Particuali	te .4 lbs./h	r. <u>!</u>
*Incinerator ESP	Pa	articulate (As	sh) 7 lbs./hr.	

2 Oxidation Unit 225 X 106 lbs./yr. crude T.A.

Same as # 1 except Incinerator output

**Incinerator ESP		Particulate lbs./hr.	Process Wt.(lbs./hr.	(Waste Feed Rate
	Before ESP After ESP	161. 6.6	3 014 19 84	

^{**}Units not in compliance with current rules and regulations.
Emissions listed are the best results from numerous tests.

<u># :</u>	3 Oxidation Un	465 X 100 1	bs./yr. crude T	Γ.Α.
High Pressure Absorber		Acetic Acid	56 lbs./hr.	<u>-</u>
(Scrubber)		Methyl Acetate	350 lbs./hr	<u> </u>
		C.O.	1080 lbs./hr.	Plant
Low Pressure Absorber		Acetic Acid	4 lbs./hr.	
(Scrubber)		Methyl Acetate	75 lbs./hr.	Studie
Dehydration Tower		Acetic Acid	18 lbs./hr.	die
·		Methyl Acetate	75 lbs./hr.	
Storage Silos		T.A. Particulate	1 lb./hr.	
**Incinerator ESP		Particulate lbs./hr.	Process Wt.(Walbs./hr.	aste Feed Rate)
	•	103./111.	103./111.	Races
	Before ESP	61.6	2360	
	After ESP	16.1	2270	•

# 4 0	xidation Unit 515 X 10 ⁶ lbs. crude T.A./yr.
High Pressure Absorber (Scrubber)	Acetic Acid 22 lbs./hr. Methyl Acetate 272 lbs./hr. C.O. 1090 lbs./hr.
Low Pressure Absorber (Scrubber)	Acetic Acid of 2 lbs./hr.
Dehydration Tower	Acetic Acid 20 lbs./hr. Methyl Acetate 273 lbs./hr.
Storage Silos	T.A. Particulate 1 lb./hr.
**Incinerator Scrubber	Particulate Process Wt. (Waste Feed lbs./hr. Rate)
	15.7 2400 lbs./hr.

^{**}Units not in compliance with current rules and regulations.

Emissions listed are the best results from numerous tests.

	Paraxylene Unit 360 X 100	lbs. paraxylene/yr.
Regenerator	co ₂	5950 lbs./hr.
Reboiler	Part. SO ₂ NO _X CO HC	.16 lb./hr04 lb./hr. 1.9 lb./hr004 lbs. Negligible
Flare ¹ .	Particulates SO ₂ NO _X CO HC	.1 lb./hr02 lb./hr. 1.1 lbs./hr002 lb./hr. Negligible
Desulfurizers ² .	Sulfur	.04 lb./hr.
Catalyst Regeneration ³ .	co ²	1500 lbs./hr.

- 1. Normal emission for flare--no upset
- 2. Desulfurizers only discharge 575 hrs./yr.
- 3. Catalyst regenerations occur about three times/yr. and last for about 24 hrs./regeneration

E.I. DUPONT de NEMOURS & COMPANY

Emission Information for DuPont's Cape Fear Plant

The main offices of DuPont were visited to obtain emission information for the Cape Fear Plant in Wilmington, North Carolina. DuPont leases its DMT-TPA manufacturing technology from both Amoco and Tennessee Eastman. They have decided that they cannot give out any information concerning the Cape Fear Plant without express authorization from Amoco and Tennessee Eastman. Letters asking for this authorization are included in Appendix C. The following is a trip report for the visit to DuPont's main offices in Wilmington, Delaware.

Trip Report

By D. Durocher

Subject Meeting with DuPont personnel to gather emission information for the Cape Fear DMT-TPA Plant

Attending

- J.R. Cooper Environmental Manager,
 Polymer Intermediates Dept., Wilmington,
 Delaware
- D.F. Rapp Asst. Environmental Manager PID, Wilmington, Delaware
- W.V. Osgood Environmental Coordinator Sabine River Works, Orange, Texas
- W.B. Beck Environmental Coordinator Victoria Plant, Victoria, Texas
- B.W. Hardy Asst. Technical Superintendent Victoria Plant, Victoria, Texas
- C.B. Everett Legal Department
 Energy and Environment Division, Wilmington,
 Delaware

P.A. Palmer - Engineering Service Division
Engineering Department, Wilmington, Delaware

H.S. Elenterio - Production Manager
Nylon Intermediates Division
PID, Wilmington, Delaware

The following points were made during the discussion with DuPont personnel:

 DuPont leases its DMT technology from Tennessee Eastman Co. and its TPA technology from Amoco. As such, they are not at liberty to divulge any information without the express authorization of Eastman and DuPont. The people I should contact are:

Dr. Robert Rosscup Patenting and Licensing Representative Standard Oil Company of Indiana Chicago, Illinois

(Telephone 312-856-5944)

and

Mr. Robert L. Long Licensing Manager Tennessee Eastman Company Kingsport, Tennessee

(Telephone 615-246-2111, Ext. 3575)

- The DuPont process is exactly the same as Amoco's and Eastman's, therefore, extrapolation of their emissions to DuPont should give accurate results.
- John Cooper said that the information that the State of North Carolina had was for the whole site, at which Dacron is also manufactured.
- It was finally decided that GCA should contact Dr. Rosscup and Mr. Long to try to free the emissions information. In any event, a letter should be sent to John Cooper outlining precisely what information will be needed.

Emission Information From State Agencies

The following information was obtained from the North Carolina Department of Natural and Economic Resources. This information was used in Section II to quantify the emissions from DuPont's Cape Fear Plant. As can be seen from the following, the absorber is 98 percent efficient in removing acetic acid from the p-xylene oxidizer off gases.



JAMES E. HOLSHOUSER, JR., GOVERNOR · GEORGE W. LITTLE, SECRETARY

SOUTHEASTERN FIELD OFFICE

3143 WRIGHTSVILLE AVE. WILMINGTON 28401 TELEPHONE 919 762-3394

May 18, 1976

Mr. Peter Spann GCA--Technology Div. Burlington Road Bedford, Mass. 01700 Recd

5/211

Dear Mr. Spann:

Enclosed, you will find the block diagrams for E. I. DuPont de Nemours & Co. Cape Fear Plant.

The E. I. DuPont process differs from the Hercules process in that the Hercules process produces directly dimethyl terephthalate in a single stage process whereas DuPont produces terephthalic acid and esterifies with methanol to dimethyl terephthalate. The Hercules reaction reads as follows:

whereas, DuPont's reaction reads as follows:

$$\begin{array}{c}
CH_3 \\
O \\
CH_3
\end{array}$$
+ air $\xrightarrow{\text{heat}}$
 $\begin{array}{c}
COOH \\
COOH \\
TPA
\end{array}$

COOCH
$$0$$
 + 2MeOH 0 cooch 0 cooch 0

Catalysis are used in both processes.

Mr. Peter Spann Page 2 May 18, 1976

If this office may be of any further help or should you have any questions regarding the material for Hercules or for the E. I. DuPont de Nemours and Co., please feel free to contact Mr. W. L. Tippitt of this office at (919) 762-3394.

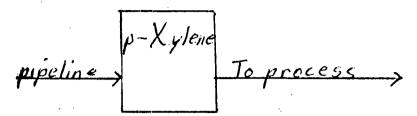
Sincerely yours,

William L. Tippitt

Environmental Engineer I

lms

Enclosure



Tank form capacity is 1,260,000 gallons
Tanks are equiped with cone roofs.

Emissions calculated from registration
information is:
62,400 lbs/yr.

pipeline fuel To process

Tank farm capacity is 840,000 gallons
Tank(s) have cone roofs.
Emissions calculated from registration
information is:
81,600 lbs/yr.

Ethylene ; Glycol To process;

No data available.

Acetic Toprocess >

No data available, Vapors scrubbed with water, A-55

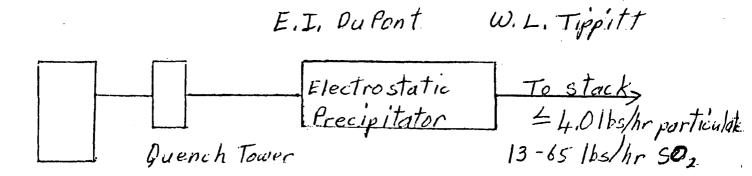
MeOH To process >

W.L. Tippitt

No data available. Methanol vapors scrubbed with water to recover Medil

I controlled by baghouses

72 lb/hr Acetic Acid Reactors 17866916/hr 468 16/hr H20 467 lb/hr p-xylene 20 16/hr CH4 150,237 lb/hr CO2, O2, No 1526 lb/hr CO MeOH esterification 569 lb/hr Me Brt Mede to DMI 47 lb/hr Unknown ABSORBER recycle & Scrubbing fluid is H. O 10 Koch-Valve Trays Separation + purification 1 +2 Demoster section Crystalization + Prying 3300 lb/hr Acetic Acid Molten DMT shipped 1311 Whr H20 Fumes serubbed and/or 5251Whr p-Xylene Baghouses (99%) 21 1b/hr CH4 171,058 16/hr CO2, O2, N2 1747 16/hr CO 652 lb/hr MeBr + MeAc 54 lb/hr Unknown Separation operation Crystalization & Drying TPA powder, storage + transfer



Incinerator
Primary 2000-32009
Secondary 16009
1.9 tons/hr

HERCULES INCORPORATED

Emission Information From Hercules' Wilmington, North Carolina Plant

The main offices of Hercules were visited to obtain emission information for the Wilmington Plant. The following is a trip report of the visit to Wilmington.

Trip Report

By D.F. Durocher

Subject Trip to Wilmington, Delaware to visit Hercules

Attending

Dr. Richard A Chaddock Environmental Coordinator Hercules, Incorporated Wilmington, Delaware

During the discussion the following points were made:

- Hercules has taken the position that they will no longer give out any information — especially to contractors.
- Dr. Chaddock noted that the information contained in the original Houdry questionnaire was quite good and extensive.
 He said that an accurate representation of the emissions could be obtained by scaling the emission data up to present capacity.
- Dr. Chaddock would not reveal the production capacity of the Wilmington Plant, but he thought that 1,300 million pounds per year was too high.
- Dr. Chaddock stated that the Eastover, South Carolina Plant is planned, but is not yet under construction. He did not know when it would be on line.

Emission information listed in Table II-3 was taken directly from the Houdry questionnaire. This data was scaled by the change in production capacities (i.e., 450 million pounds in 1972 versus 1,300 million pounds in 1976).

Emission Information From State Agencies

The following information was received from the State of North Carolina. It was useful in determining the efficiency of the carbon adsorbers for limiting hydrocarbon emissions from the p-xylene oxidation unit.

JAMES E. HOLSHOUSER, JR., GOVERNOR · GEORGE W. LITTLE, SECRETARY

SOUTHEASTERN FIFLD OFFICE

3143 WRIGHTSVILLE AVE. WILMINGTON 28401 TELEPHONE 919 762-3394

May 6, 1976

Mr. Peter Spann GCA - Technology Div. Burlington Road Bedford, Mass. 01700

Dear Mr. Spann:

Enclosed, you will find Permits for both Hercules and DuPont. The Permits are those directly related to the DMT process. Several Permits which relate to boilers and baghouses have not been included. Should you desire these Permits, this office will be happy to photocopy the other Permits and forward them to you. Should you have any questions regarding the Hercules, Inc. material, or suggestions on how the DuPont material that is to follow may be improved, please feel free to contact Mr. W. L. Tippitt of this office at (919) 762-3394.

Sincerely yours,

William L. Tippit

SKS

Hercules

W.L. Tippitt 6 May 1976

MeOH

To process — Methanol

Tank farm capacity is 2,000,000 gallons

Only one tank had a floating roof when

tank farm was registered. Now all

tanks are equipmed with floating

roofs. Emissions based on information

at time of registration:

11.1 lbs/hr average

158 lbs/hr max.

71,650 lbs/yr.

p-xylene To process

Tank form capacity is 6,000,000 gallons
Cone roof tanks are present. Emissions
based on information at Time of
registration:
6.1 lbs/hr average
40 lbs/hr max.
53,000 lbs/yr.

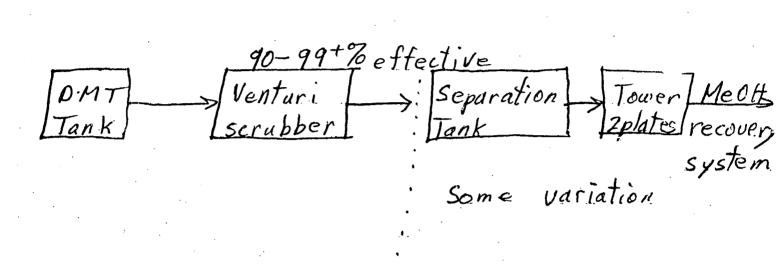
Ethylene Glycol

No Pata availeable. Some quantity is used in scrubbers and maybe in the process also.

W.L. Tippitt 6 May 1971 Hercules Tank farm capacity 15 4,204,000 gallons. Sulfur percentages are 2,1% and 1.4. 0.95 lbs/hr average 6.62 lbs/hr max. 8470 lb/yr. 90+% effective 280 lbs/hr HC 165/hr N2,02,60366 p-Xylene Reactors Carbon Adsorber Recycled to process Tall vents scrubbed by MeOH @ Separation + purification crystalization + Drying pelletize buging Molten DMI o containers Shipped V Fumes scrubbed controlled by baghouses 99% control

Hercules

1. +2. DMT vapor and displaced air and Me OH vapors
from process storage (day) tanks are handled as
follows:



MeOH recovery System passes MeOH vapor from the scrubbing system is passed through a refrigeated Brine condenser and a water scrubber before the inert gas is discharged to the atmospher 4000 lb/hr MeOH to 75 lb/hr 98 % efficiency MeOH—water mixture distilled to recover MeOH.

TENNESSEE EASTMAN

Emission Information For Tennessee Eastman's Kingsport Plant

Eastman's Kingsport Plant was visited to obtain emission information. This information was presented as copies of permit applications the Kingsport Plant had filed with the state. The following is a trip report for the visit to the Kingsport Plant.

Trip Report

By D.F. Durocher

Subject Trip to Tennessee Eastman Co. in Kingsport, Tennessee Attending

Neal Simons Clean Environment Program Tennessee Eastman Co.

C.E. Swanson Clean Environment Program Plant Area Member

D.Z. Elliot
DMT Departmental Superintendent

B. Robertson, TPA Departmental Superintendent

In lieu of an update of the Houdry questionnaire, copies of state permit applications for each of the DMT/TPA units for both the Kingsport Plant and the Columbia, South Carolina Plant were given to GCA. During the course of the conversation, the following points were made:

- The production capacity of the Columbia Plant is confidential. However, the permit information does give emissions.
- The technologies used at the Columbia and Kingsport Plants are similar.
- Eastman expands by debottlenecking, parallel production lines, or building new plants (e.g., the Columbia Plant). The method used depends on the size increase required. No one knew of an "economical" plant size.

- A growth projection of 10 to 12 percent may be reasonable.
- The information contained in the state permit applications is as accurate as any information that is available.
- They do not know of any variables that affect emissions in any significant way.
- Emission control equipment efficienies are given in the permit applications.

In the following, the permit information from the Kingsport Plant is reproduced. TPA is produced in a single plant which is identified in the permit applications as "Process Emission Source Number B232-1." The crude TPA is then processed into DMT in four plants labeled, B-237-1, B-237A-1, B-261-1, and B-261A-1.



Process Number	Emis B-23		Sou	irce
Page	1	of	61	
Edition	D		•	/

PROCESS EMISSION SOURCE COVER SHEET - APC 21

	,	TENNESSEE DEPARTMENT OF PUBLIC HEALTH		DO N	OT WRITE IN THIS	SPACE
VAIL	. TO:	DIVISION OF AIR POLLUTION CONTROL CORDELL HULL BUILDING C2-212		COMPANY NO.		111
		NASHVILLE, TENNESSEE 37217		PERMIT NO.		
				PROCESS EMI	SSION SOURCE NO.	للللا
				EMISSION PO	INT NO.	
				REVIEWER		
				DATE		
-	COMPANY NAME	TENNESSEE EASTMAN COMPAN	Y			
2.	PROCESS EMISSI	ON SOURCE NUMBER B-232-1	3. SIC CO	DE 2865		YES
4.	DID CONSTRUCTI	ON OF THIS PROCESS BEGIN ON OR BEFORE AUGUST 9,	1969? X YES	NO ON OR BI	EFORE APRIL 3, 19	72? X
		ESCRIPTION OF THE PROCESS ALONG WITH A FLOW DIAG			POINTS, MATERIAL	INPUTS,
		TS AND EMISSION POINTS SHOULD BE NOTED IN POUNDS			aali aalin ai	20
•		le Acid (TPA) Manufacture - Building			234, 2348, 23	-
•	290A, 290b	, 291, and 232 (Control Room) of the	ACIG DIVISION	•		_
	NOTE: ATTACH	FLOW DIAGRAM FOR PROCESS EMISSION SOURCE CLAIMED	ON SEPARATE SHEET			
	More: Richell			•		
6.	TYPE OF PROCES	S: CONTINUOUS X B	атсн	COMBINE	· []	
7.	OPERATIONAL SCI	HEDULF OF PROCESS EMISSION SOURCE:				
	A. HOURS PER I	DAY 24	D. % ANNUAL TH	IRUPUT		
	B. DAYS PER W	EEK	DEC-FEB	MARCH-MAY	JUNE-AUGUST	SEPT-NOV
(C. WEEKS PER	year 52	25	25	25	25
8.	LIST MATERIAL	INPUTS TO PROCESS EMISSION SOURCE:				
			LBS/OP	ERATING UR	FLOW DIAG	EDAM
_	NAME OF	INPUT	CAPACITY	LOADYAL	REFEREN	
4	. p-Xylene	•	43,800	43,800	1	
	. Acetalde	ehyde	44,300	44,300	2	
9	Air		359,000	359,000	3	1
	. Acetic A	Acid	134,000	134,000	4	
_						1
F	•				·	
9	; <u>.</u>					1
-		ITING HOUR INPUT TO PROCESS EMISSION SOURCE	581,000	581,000		
				DED TO THREE		

(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)

Process Emission Jource Number B-232-1

Page _ of 61 Edition LIST MATERIAL OUTPUTS FROM THIS PROCESS EMISSION SOURCE:

NAME OF OUTDIT	LBS/OPERATING HOUR		FLOW DIAGRAM	
NAME OF OUTPUT	CAPACITY	LOADING	REFERENCE	
Terephthalic Acid	66,500	66,500	5	
Acetic Acid	50,600	50,600	6	
Methyl Acetate	700	700	7	
Water ,	20,000	20,000	8	
Inert Gas	65,000	65,000	9	
TAL LBS/OPERATING HOUR OUTPUT FROM PROCESS EMISSION SOURCE	203,000	203,000	(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)	

TO. LIST AIR POLLUTION EMISSION POINTS FOR THIS PROCESS EMISSION SOURCE. ATTACH A SEPARATE "EMISSION POINT DATA" SHEET, APC-22, FOR EACH POINT.

	EMISSION POINT NO. OR CODE	LBS PARTICULATE/OPERATING HOUR	FLOW DIAGRAM REFERENCE
A.:	A	0	A
В.	В	0	В
c.	C	0	С
D.	D	0	D
€.	E	0	E
F.	P	0	F

TOTAL LBS. OF PARTICULATE EMITTED FROM PROCESS EMISSION SOURCE PER OPERATING HOUR

NOTE: ATTACH ADDITIONAL SHEETS AS REQUIRED. FOR ITEMS 8, 9, AND 10.

(TOTAL ROUNDED TO TWO SIGNIFICANT FIGURES)

11.	J. C. EDWARDS BHZ	June 27, 1974	
-	SIGNATURE OF RESPONSTIBLE MEMBER OF FIRM	COATE OF APPLICATION	•

12. TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS FORM

NAME

J. C. Edwards

TITLE

Manager, Clean Environment Program

JUN 2 7 1974 DATE PHONE 246-2111, Ext. 244

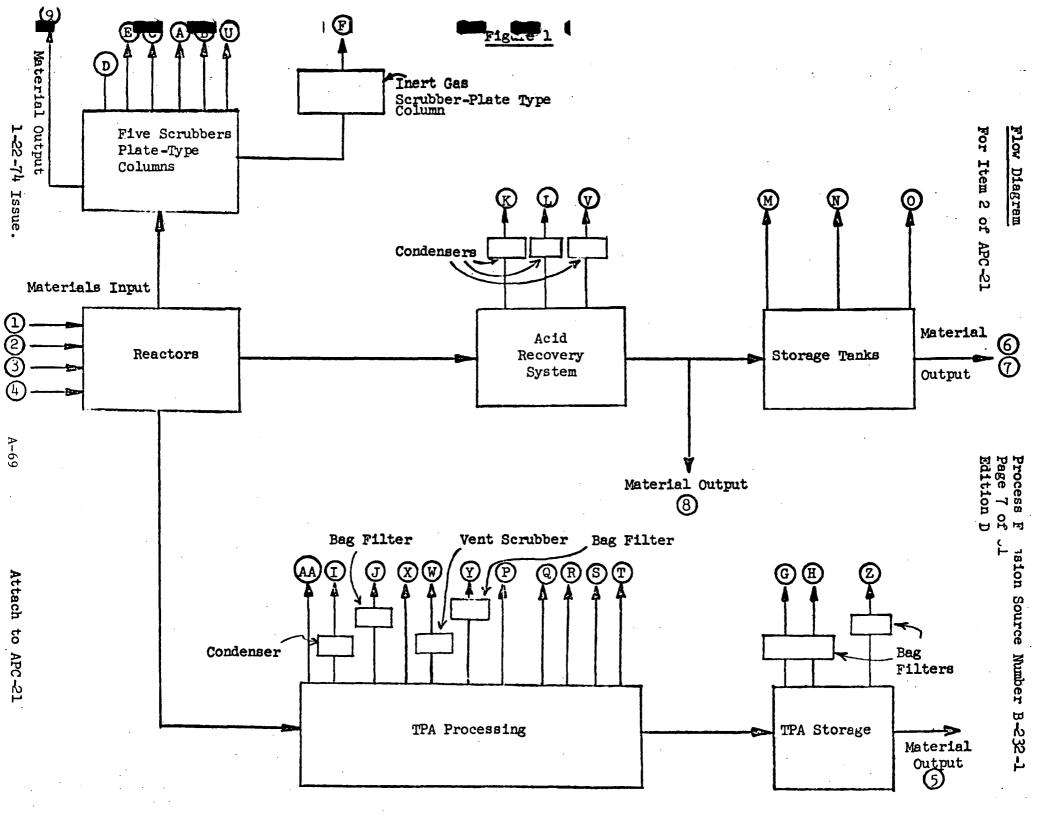
A		
	FOR OFFICIAL USE ONLY PROCESS EMISSION SOURCE CLAIMED IS ACCEPTABLE.	
	PROCESS EMISSION SOURCE CLAIMED IS NOT ACCEPTABLE.	
	RECOMMENDED MAKE UP OF PROCESS EMISSION SOURCE ATTACHED ON SEPARATE SHEET.	
	PROCESS EMISSION SOURCE IS NOT IN COMPLIANCE WITH APPLICABLE REGULATIONS.	
	PROCESS WEIGHT TABLE APPLIES TO THIS PROCESS EMISSION SOURCE.	•
	DIFFUSION EQUATION APPLIES TO THIS PROCESS EMISSION SOURCE. TABLE I	TABLE 11
ALLOW	ABLE EMISSIONS LBS/HOUR ACTUAL EMISSIONS	TONS/YEAR
FILIN	G IS AUTHORIZED BY OATE	

Proces	s Emi	ssion	Source
Number	B-2	232-1	
Page	6A	of	61
Edition	n I	<u> </u>	

Supplement to APC-21 Form

13.	NORMAL OPERATING SCHEDULE: 8,760 H	OURS PER YEAR.
14.	. DATES OF ANY SCHEDULED ANNUALLY OCCURRING SH	UTDOWN OF OPERATIONS None*
		20% in 1962/20% in 1965 20
15 n	n DATE (YEAR) INSTALLATION (OR PROCESS) WENT O	N LINE 20% in 1964/20% in 1967
16.	ESTIMATED PERCENT INCREASE OR DECREASE IN PR	
	BASIS FOR THE 5 YEARS AFTER THE CALENDAR YEA	R FOR WHICH IHIS REPORT IS
	COMPLETED O	

*The plant as a whole is not scheduled for a shutdown during the course of a year. However, individual process components are scheduled down during the Fourth, Fifth, Eleventh, and Twelfth (April, May, October, and November) Periods of each year for cleanout.





Process			Sour	ce_
Number	B-23	52-I		_ =
Page	8	of	61	
2114	- 70			

		STACK EMISSION P	OINT DATA - A	APC - 22	()
1.	COMPANY NAME PROCESS EMISSION SOURCE	EPARTMENT OF PUBLIC HEALTH AIR POLLUTION CONTROL ELL HULL BUILDING TENNESSEE 37213 TENNESSEE EASTMAN COMP NUMBER B-232-1 R CODE (AS SHOWN ON PROCESS EMIS		PERMIT NO. L.L PROCESS EMISSIO EMISSION POINT REVIEWER L.L DATE L.L.L	
			01		
		SE POINT HEIGHT ABOVE GRADE			
5.	SHOW INSIDE DIAMETER OF	STACK OR RELEASE MECHANISM AT T	OP 1.3		FEET
6.	SHOW NORMAL EXIT GAS TEN	MPERATURE65	OF. 7. SHOW EXI	T GAS VELOCITY	87.3 FT/SE
	INDICATE PERCENT OF TIME	E OVER 125°F0		×.	_
		OW RATE 121.2		FT ³ /SEC @ 70°F A	ND 1 ATMOS.
		3.3 (GR./CU. FT. D			
		ASE POINT TO NEAREST PROPERTY LI			
		AS IT LEAVES STACK X			
	AIR POLLUTION CONTROL EQ				
. · · · · · · · · · · · · · · · · · · ·		AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE1	EFFICIENCY
	PARTICULATE				
	SULFUR DIOXIDE				
	OXIDES OF NETROGEN	·			
1	HYDROCARBONS	Yes	1966	002	46%
	CARBON MONOXIDE				
9	GASEOUS FLUORIDES				
-				<u> </u>	**

ADDITIONAL COMMENTS:		· ·		,			
				Ĉ.			
SHOW AIR CONTAMINANT DA	ATA FOR THI	S EMISSION	EMISSION PO	INT DATA			
			CONCE	NTRATION	AVERAGE	EMISSIONS	METHOD
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASURE
	-			GRAINS/SCF			
PART ICULATES	<u> </u>			AT 70° F	-		
SULFUR DIOXIDE	X		 	PPM	 		
OXIDES OF NITROGEN	Х	ļ	5000	PPM	1/7	1 1/2 222	A
CARBON MONOXIDE	+	X	5000	PPM	167	1,463,000	Analyti
GASEOUS FLUORIDES	×		ļ		 		ļ <u>.</u>
OTHERS (NAME CHEMICAL)				1-, 1-, 3	 	1 750 000	
Methyl Acetate		X	0.00012	Lb./Ft.3	52.4	459,000	Analyti
Xylene		Х	28	ppm	3.4	30,000	Analyti
Acetic Acid		X		7 Lb./Ft.3	0.3	2,700	Analyti
Acetal dehyde Meth ane		X X	0.000011 145	Lb./Ft. ³ ppm	4.8 2.7	42,400 23,400	Analyti Analyti
			FOR OFFIC	CE LISE ONLY			
				CE USE ONLY			
PROCESS WEIGHT TABLE			SION POINT.				
EMISSION POINT IS NO	T IN COMPL	IANCE WITH	SION POINT.	TICULATE REGULAT			
EMISSION POINT IS NO	T IN COMPL	IANCE WITH	SION POINT. APPLICABLE PART SULFUR DIOXIDE	TICULATE REGULAT	RD OF 2000 PPN		
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO	T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE	TICULATE REGULAT EMISSION STANDAI EMISSION STANDAI	RD OF 2000 PPM RD OF 500 PPM,	1.	
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO	T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE	TICULATE REGULAT EMISSION STANDAI EMISSION STANDAI	RD OF 2000 PPM RD OF 500 PPM,	1.	
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EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSION POINT IS NO	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE SASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. ID	RD OF 2000 PPM RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS	T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS CONTINUOUS MONITOR (S	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS CONTINUOUS MONITOR (S	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IS ACCEPT T IS ACCEPT	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWA
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT EXPLAIN	T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL T IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PARE SULFUR DIOXIDE GASEOUS EMISSIO	TICULATE REGULAT EMISSION STANDA EMISSION STANDA ON STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS ; (3)		AND ALLOWA



Proces	s Emi	ssion	Source	
Number	B-2	32-1		
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Edition	n D			_

		OLVOK FLITOOTON	TOTHI DATA ALC			
		SSEE DEPARTMENT OF PUBLIC HEALTH		DO NOT W	RITE IN THIS SPACE	
MAIL	-	ION OF AIR POLLUTION CONTROL 2 CORDELL HULL BUILDING		COMPANY NO.		
	•	ILLE, TENNESSEE 37213		PERMIT NO.		
				PROCESS EMISSION	ON SOURCE NO.	
				EMISSION POINT	NO	
1.	COMPANY NAME	TENNESSEE EASTMAN CO	MPANY	REVIEWER		
	• *	SOURCE NUMBER B-232-1	·	DATE		
		MBER OR CODE (AS SHOWN ON PROCESS E		. В		
4,	INDICATE STACK OR	RELEASE POINT HEIGHT ABOVE GRADE _	83		FEET.	
5 . . :	SHOW INSIDE DIAME	TER OF STACK OR RELEASE MECHANISM A	т тор1.3		FEE	
•		GAS TEMPERATURE 57		S VELOCITY	87.3 FT/SE	
-	INDICATE PERCENT	OF TIME OVER 125°F 0		x.		
9. 9	SHOW EXIT GAS VOL	ME FLOW RATE 121.2	F	T ³ /SEC @ 70°F /	AND I ATMOS.	
		TENT 3.3 (GR./CU. FT.				
		RELEASE POINT TO NEAREST PROPERTY			FEET.	
2. 0	DIRECTION OF GAS	TREAM AS IT LEAVES STACK X	U=UP,	D-DOWN, _	H-HOR I ZONTAL	
3. <u>A</u>	LIR POLLUTION CONT	ROL EQUIPMENT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY	
5	ARTICULATE					
. §	ULFUR DIOXIDE	·				
0	XIDES OF NITROGEN				·	
H	YDROCARBONS	Yes	1967	002	46%	
2	ARBON MONOXIDE					
2	ASEOUS FLUORIDES					
~					T	
-					·	
	•	•			•	

			nalyzer				
					1	·	
ADDITIONAL COMMENTS:							<u></u>
SHOUL A 10 SOUTHAIN AND DAY	'4 FAO TIL	c Duccion	EMISSION POIN	IT DATA			
SHOW AIR CONTAMINANT DAT	A FOR THI	S EMISSION	T	·			
ALAS A LAW ALLES			CONCENT	RATION	AVERAGE	EM ISSIONS	METHOD O
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
PART ICULATES	x			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	x		 	PPM		 	
	x		<u> </u>	PPM		 	
OXIDES OF NITROGEN	+	х	5000	РРМ	167	1,463,000	Analestia
CARBON MONOXIDE GASEOUS FLUORIDES	Х		7000	PPM	<u> </u>	1 1,403,000	Analytica
OTHERS (NAME CHEMICAL)	+	 		<u> </u>		 	<u> </u>
Methyl Acetate	 	х	0.00012	Lb./Ft.3	52.4	459,000	Analytics
Xylene	1	x	28	ppm	3.4	30,000	Analytica
Acetic Acid	1	х	0.00000007	 	0.3	2,700	Analytica
Acetaldehyde	<u>-L</u>	Х	0.000011	Lb./Ft.3	4.8	42,400	Analytica
Methane		X	145	ppm	2.7	23,400	Analytica
			FOR OFFICE	USE ONLY			•
PROCESS WEIGHT TABLE	APPLIES TO	D THIS EMIS	SION POINT.			·	•
PROCESS WEIGHT TABLE			•	CULATE REGULATIO	ON. ALLOWAR	LE EMISSIONS	
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	APPLICABLE PARTI				····
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	APPLICABLE PARTI SULFUR DIOXIDE E	MISSION STANDARD) OF 2000 PPM		
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL IN COMPL	IANCE WITH	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E	MISSION STANDARD	O OF 2000 PPM O OF 500 PPM.	•	
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL IN COMPL IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E	MISSION STANDARD	O OF 2000 PPM O OF 500 PPM.	•	
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	IN COMPL IN COMPL IN COMPL	IANCE WITH STANCE WITH STANCE WITH	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	0 0F 2000 PPM 0 0F 500 PPM. HTIFY GAS	•	_ AND ALLOWASL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL IN COMPL IN COMPL IN COMPL	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	0 0F 2000 PPM 0 0F 500 PPM. HTIFY GAS	•	_ AND ALLOWASL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS EMISSIONS	IN COMPL IN COMPL IN COMPL IN COMPL	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS	•	_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL IN COMPL IN COMPL IN COMPL FOR (1)	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS	•	_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S	IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS	•	_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION ; (2)	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS HITIFY GAS HITIFY GAS	•	_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT	IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL IN COMPL	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION ; (2)	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS HITIFY GAS HITIFY GAS	•	_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT METHOD OF MEASUREMENT EXPLAIN	IN COMPL IN	IANCE WITH SIANCE	APPLICABLE PARTI SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION ; (2)	MISSION STANDARD MISSION STANDARD STANDARD. IDEN	O OF 2000 PPM. O OF 500 PPM. HITIFY GAS HITIFY GAS (3)	•	_ AND ALLOWABL _ AND ALLOWABL RECOMMENDED.

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WAIL TOS	TENNESSEE DEPARTMENT OF PUBLIC DIVISION OF AIR POLLUTION CONT C2-212 CORDELL HULL BUILDING NASHVILLE, TENNESSEE 37213			PERMIT NO. L	RITE IN THIS SPACE I I I I I I I I I I I I I I I I I I I
	Y NAME TENNESSEE EA		Y	REVIEWER L	
3. EMISSIC	ON POINT NUMBER OR CODE (AS SHOWN ON	PROCESS EMISSIO	ON SOURCE COVER SHE	ET). C	
	E STACK OR RELEASE POINT HEIGHT ABO				
					•
5. SHOW IN	ISIDE DIAMETER OF STACK OR RELEASE M	ECHANISM AT TOP	1.2		FEET
6. SHOW NO	RMAL EXIT GAS TEMPERATURE 80		F. 7. SHOW EXIT	GAS VELOCITY	150 FT/SEC
INDICAT	E PERCENT OF TIME OVER 125°F	0		×.	
	IT GAS VOLUME FLOW RATE	•		_	AND 1 ATMOS.
	ISTURE CONTENT 4-7				
	STANCE FROM RELEASE POINT TO NEARES				
	ON OF GAS STREAM AS IT LEAVES STACK				
S. AIR POL	LUTION CONTROL EQUIPMENT				
		TAMINANT ROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
PARTICU	LATE				,
SULFUR	DIOXIDE				
OXIDES	OF NITROGEN		·		
HYDROCA	RBONS Ye	s	1965	002	82%
CARBON	MONOXIDE				
CASEOUS	FLUOPIDES				
•	•				

-ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT D.	ATA FOR THI	S EMISSION	EMISSION POIL	NT DATA			
			CONCEN	TRATION	AVERAGE	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
PART ICULATES	x			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	x			PPM			
OXIDES OF NITROGEN	x			РРМ			
CARBON MONOXIDE	X			РРМ			
GASEOUS FLUORIDES	X		 	РРМ			
OTHERS (NAME CHEMICAL)							
Methyl Acetate		х	0.00036	Lb./Ft.3	207	1,816,000	
Acetaldehyde		x	0.000076	Lb./Ft.3	43.8	384,000	
p-Xylene		х	34	ppm	5.4	47,700	†
Acetic Acid Methane		X X	0.00017 372	Lb./Ft. ³ ppm	99.4 9.1	870,900 80,000	
			FOR OFFICE	E USE ONLY			
7							
PROCESS WEIGHT TABLE			-				# a.
EMISSION POINT IS NO					•		#/\
EMISSION POINT IS NO					,	•	
DMISSION POINT IS NO					**		AND ALLOUANE
EMISSION POINT IS NO			JAGEUUG EMIGGION	TOTALINARU. 10t	MIIFT GAS	. 	AND ALLOWABLE
EMISSIONS BAISSION POINT IS NO			SASERIJE EDIJECIA	U STANDADO INC	NTIEV GAS		AND ALL OLIAN P
			ANDERONS EMISSIUM	TOTANUAKU, IUS	CAD		AND ALLOWABLE
CONTINUOUS MONITOR (. 14		. /5		RECOMMENDED.
METHOD OF MEASUREMEN			; (2)		; (3)		NEWNICHUCU.
METHOD OF MEASUREMEN							
4		•					
EXPLAIN	-						
EXPLAIN							



Process	Emission	Source
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		•	STACK CHISSIUM P	UINI DATA - A	FC - ZZ	
ve i	it to:	TENNESSEE DEPARTM DIVISION OF AIR P C2-212 CORDELL HU NASHVILLE, TENNES	LL BUILDING		PERMIT NO. L	RITE IN THIS SPACE P ON SOURCE NO.
					REVIEWER	
			NESSEE EASTMAN COME	PANY	DATE	
		IISSION SOURCE NUMBER				
3,	EMISSION P	OINT NUMBER OR CODE	(AS SHOWN ON PROCESS EMIS	SSION SOURCE COVER SHE	ET). D	
4.	INDICATE S	TACK OR RELEASE POIN	NT HEIGHT ABOVE GRADE	112		FEE 1
5.	SHOW INSIDI	E DIAMETER OF STACK	OR RELEASE MECHANISM AT 1	TOP 0.83		FEET
6.	SHOW NORMAI	L EXIT GAS TEMPERATE	JRE55	OF. 7. SHOW EXIT	GAS VELOCITY	71 FT/SEC
r	INDICATE PI	ERCENT OF TIME OVER	125°F 0		×.	
9.	SHOW EXIT	GAS VOLUME FLOW RATE	38.7		_ FT ³ /SEC # 70°F	AND 1 ATMOS.
0.	SHOW MOIST	URE CONTENT	3.3 (GR./CU. FT. C	DRY GAS AT 70°F) AND _	3.4	(GR./CU. FT. GAS AT CONDIT
1.	SHOW DISTAN	NCE FROM RELEASE POI	INT TO NEAREST PROPERTY LI	NE 150		_ FEET.
2.	DIRECTION (OF GAS STREAM AS IT	LEAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL
3.	AIR POLLUT	ION CONTROL EQUIPMEN	17		_	
			AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
	PARTICULATE					
	SULFUR DIOX	CIDE				·
	UXIDES OF N	ITROGEN	·			
	HYDROCARBON	IS	Yes	1961	002	46%
	CARBON MONO	DX IDE				
	GASEOUS FLU	ORIDES				
-						

IF YES, DESCRIBE:	A Total	Carbon .	Analyzer	·			<u> </u>
ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT DAT	A FOR THE	s emission	EMISSION POIN	T DATA			
			CONCENT	RATION	AVERAGE E	MISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
PART ICULATES	х			GRAINS/SCF AT 70° F	,		
SULFUR DIOXIDE	x			РРМ	·		
OXIDES OF NITROGEN	Х			PPM			
CARBON MONOXIDE	1	χ.	5000	PPM	53.3	447,000	Analytical
SASEOUS FLUORIDES	х			PPM			
OTHERS (NAME CHEMICAL)	1						
Methyl Acetate		х	0.00012	Lb./Ft. ³	16.7	147,000	Analytical
-Xylene	1	х	28	ppm	1.1	9,700	Analytical
Acetic Acid	1	х	0.00000007		0.01	88	Analytical
Acetaldehyde Methane		X X	0.000011 145	Lb./Ft. ³	1.5 0.85	13,000 7,500	Analytical Analytical
			FOR OFFICE	LISE ONLY			
l						•	
PROCESS WEIGHT TABLE				== ===			
EMISSION POINT IS NOT		 					
EMISSION POINT IS NOT				·	•	•	
EMISSION POINT IS NOT					**		AND ALLOWADED
EMISSION POINT IS NOT EMISSIONS	IN COMPL	MINGE WITH	UNICOUS EMISSION	JIANUANU, IUL	MITT DAS		AND ALLOWABLE
EMISSION POINT IS NOT	IN COMO!	LANCE WITH	SASEMIS EMISSION	STANDARD INC	NTIEV GAS	•	AND ALLOWABLE
EMISSIONS	III COMPC	MIIN WITH	CHOCOUG EMISSION	STANDARU. TUE	CAU	<u> </u>	AND ALLUWABLE
CONTINUOUS MONITOR (S	FOR (1)		. (2)		. (3)		RECOMMENDED.
METHOD OF MEASUREMENT			· '''.		;		MEOUNIENDED.
METHOD OF MEASUREMENT							
EXPLAIN							
ABLE EMISSIONS (TONS/YE	AR)	*************************************			 	·. · · · · · · · · · · · · · · · · · ·	
	,						



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		S	TACK EMISSION F	<u> POINT DATA - A</u>	PC - 22	
ι.	COMPANY NAME	ISION OF AIR POL 212 CORDELL HULL WILLE, TENNESSE TENN	BUILDING	PANY	PERMIT NO. L.I.	
			AS SHOWN ON PROCESS EMI	SSION SOURCE COVER SHE	ET) E	<u> </u>
5. 6.	S40W INSIDE DIAM SHOW NORMAL EXIT	ETER OF STACK O		0.83 	GAS VELOCITY 71	FEET. FEET. FT/SEC.
			25°F 0	· · · · · · · · · · · · · · · · · · ·		
9.	SHOW EXIT GAS VO	LUME FLOW RATE	38.7		_ FT ³ /SEC @ 70°F AN	D 1 ATMOS.
0.	SHOW MOISTURE CO	NTENT 3.3	(GR./CU. FT. (DRY GAS AT 70°F) AND _	3.4	(GR./CU. FT. GAS AT CONDITIO
2.	SHOW DISTANCE FR	OM RELEASE POIN	T TO NEAREST PROPERTY L	INE 170	<u> </u>	FEET.
	7		EAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL
3.	AIR POLLUTION CO	NTROL EQUIPMENT				
			AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
F	PARTICULATE					
5	SULFUR DIOXIDE				·	
2	NIDES OF NITROGE	N				
t	MOROCARBONS		Yes	1964	002	46%
	ARBON' MONOX LDE					
9	MASSOUS FLUORIDES	,				
-				·	 	

ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT DAT	TA FOR THIS	S EMISSION	EMISSION PO	INT DATA			
	T		CONCE	ITRAT ION	AVERAGE	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
PARTICULATES	х	·		GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	х			PPM			
OXIDES OF NITROGEN	x			PPM			
CARBON MONOXIDE	1	х	5000	PPM	53:3	447,000	Analytica
GASEOUS FLUORIDES	x			PPM			
OTHERS (NAME CHEMICAL)							
Methyl Acetate		х	0.00012	Lb./Ft.3	16.7	147,000	Analytic
p-Xylene	1	х	28	ppm	1.1	9,700	Analytic
Acetic Acid	 	·x	0.0000000		0.01	88	Analytic
A	- L	X X	0.000011 145	Lb./Ft. ³	1.5	13,000 7,500	Analytica Analytica
Ace taldehyde Met hane		A.	-				
				E USE ONLY	· · · · · · · · · · · · · · · · · · ·		
Methane			FOR OFFIC	E USE ONLY			
Methane PROCESS WEIGHT TABLE) THIS EMIS	FOR OFFIC	,			
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT	IN COMPL	O THIS EMIS	FOR OFFICE FOR SION POINT.	ICULATE REGULATI			
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL	O THIS EMISSIANCE WITH	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE	ICULATE REGULATION	D OF 2000 PPM		
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL	O THIS EMISSIANCE WITH STANCE WITH STANCE	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE	ICULATE REGULATI EMISSION STANDAR EMISSION STANDAR	D OF 2000 PPM D OF 500 PPM.		
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPLIANT OF THE COMPLIANT COMPLI	THIS EMISSIANCE WITH STANCE WI	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE	ICULATE REGULATI EMISSION STANDAR EMISSION STANDAR	D OF 2000 PPM D OF 500 PPM.		
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	IN COMPLIANT COM	THIS EMISSIANCE WITH STANCE WI	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATI EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS	·	_ AND ALLOWASL
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT	IN COMPLIANT COM	THIS EMISSIANCE WITH STANCE WI	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATI EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS	·	_ AND ALLOWASL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS	IN COMPLIANT OF THE COMPLIANT COMPLI	THIS EMISSIANCE WITH STANCE WI	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATION EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		_ AND ALLOWAPL _ AND ALLOWABL
Methane PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS CONTINUOUS MONITOR (S	IN COMPLIANT OF THE COMPLIANT COMPLIANT COMPLIANT COMPLIANT OF THE COMPLIA	THIS EMISSIANCE WITH STANCE WI	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATION EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		_ AND ALLOWARL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLIANT COM	TABLE.	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATION EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		_ AND ALLOWARL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLIANT COM	TABLE.	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATION EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		_ AND ALLOWARL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLIANT OF THE COMPLIANT COMPLIANT COMPLIANT OF THE	TABLE.	FOR OFFICE SION POINT. APPLICABLE PART SULFUR DIOXIDE SULFUR DIOXIDE GASEOUS EMISSIO	ICULATE REGULATION EMISSION STANDAR EMISSION STANDAR IN STANDARD. IDE	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		_ AND ALLOWARL



Process	Emis	ssion	Sour	ce
Number_	B-2	32-1		_
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Edition]	<u> </u>		

		<u> </u>	STACK EIII2210N	PUINI DATA -	APL - ZZ		
v.	IL TO:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING		COMPANY NO. L PERMIT NO. L PROCESS EMISS EMISSION POI	WRITE IN THIS SPACE	<u></u>
1.	COMPANY NAMI	E TENI	NESSEE EASTMAN COM	PANY	REVIEWER L		
2.	PROCESS EMIS	SSION SOURCE NUMBER	B-232-1		DATE		·
3.	EMISSION PO	INT NUMBER OR CODE	(AS SHOWN ON PROCESS EM	ISSION SOURCE COVER	SHEET). F		
4,	INDICATE ST	ACK OR RELEASE POIN	T HEIGHT ABOVE GRADE	78			FEET
5.	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.83			FEET
6.	SHOW NORMAL	EXIT GAS TEMPERATU	RE 54	OF. 7. SHOW (EXIT GAS VELOCITY	75	FT/SEC
	INDICATE PER	RCENT OF TIME OVER	125°F 0		×.		,
9.	SHOW EXIT G	AS VOLUME FLOW RATE	41		FT ³ /SEC @ 70 ⁰ 1	F AND 1 ATMOS.	
0.	SHOW MOISTUR	EC CONTENT 2.3	(GR./CU, FT.	DRY GAS AT 70°F) A	ND 2.5	(GR./CU. FT. GA	S AT CONDIT
			NT TO NEAREST PROPERTY L			•	·
2.	DIRECTION OF	GAS STREAM AS IT L	LEAVES STACK X	U-UP,	D-DOWN,	н_н	ORIZONTAL
3.	AIR POLLUTIO	ON CONTROL EQUIPMENT	r				
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE ¹	EFFICIENC	Y
	PARTICULATE	·			·		
	SULFUR DIOXI	0E					
	OXIDES OF NI	TROGEN					
	HYDROC ARBONS	3	Yes	1968	002	76%	
	CARBON MONOX	10E					
	GASEOUS FLUO	PIDES					
			 				
	·	···	<u> </u>	·+·	<u> </u>		

				TO THIS EMISSIO		5 NO	<u> </u>
ADDITIONAL COMMENTS:							
							
iii							
			EMISSION POI	NT DATA			
SHOW AIR CONTAMINANT DATA	FOR THE	S EMISSION	PO INT:				
######################################	T		T				1
POLLUTANT	ABSENT	PRESENT		TRATION	AVERAGE	EM ISSIONS	METHOD (
POLLOTANT	ABSCNI	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
DADT ICHI ATES	x	*.		GRAINS/SCF AT 70° F			
PARTICULATES	X			PPM		 	
SULFUR DIOXIDE	X			PPM		 	
OXIDES OF NITROGEN	1			PPM		 	
CARBON MONOX IDE	X			PPM			
GASEOUS FLUORIDES	X			 		 	_
OTHERS (NAME CHEMICAL)	 		0.00001:0	Lb./Ft.3	<i>(</i>) =	50.000	
Methyl Acetate Acetaldehyde		X	0.000042	Lb./Ft. ³	6.15 0.15	53,300 1,300	Analytic Analytic
p-Xylene	 	X	28	·	0.31	2,700	
	<u> </u>	·	<u> </u>	bbm			Analytic
Methane		x	145	ppm	1.6	14,000	Analytic
							
			EAD AFEIR	C HEE AND V			
			FOR OFFIC	E USE ONLY			
PROCESS WEIGHT TABLE AS		•	SION POINT.				
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SION POINT. APPLICABLE PART	ICULATE REGULATIO			······
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SION POINT. APPLICABLE PART SULFUR DIOXIDE (ICULATE REGULATION	D OF 2000 PPM		
EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPLIN COMPLI	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE I	ICULATE REGULATION EMISSION STANDARI EMISSION STANDARI	D OF 2000 PPM.	•	·
EMISSION POINT IS NOT	IN COMPLIN COMPLI	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE I	ICULATE REGULATION EMISSION STANDARI EMISSION STANDARI	D OF 2000 PPM.	•	
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EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPLIN COMPLIN COMPLI	ANCE WITH S ANCE WITH S ANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SULFUR DIOXIDE I GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDARI EMISSION STANDARI N STANDARD. IDEI	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS	•	AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	IN COMPLIN COMPLIN COMPLI	ANCE WITH S ANCE WITH S ANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SULFUR DIOXIDE I GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDARI EMISSION STANDARI N STANDARD. IDEI	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS	•	AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT	IN COMPLIAN	ANCE WITH S ANCE WITH S ANCE WITH S ANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SASEOUS EMISSION GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDAR N STANDARD. IDEO	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT I	IN COMPLIANCOM	ANCE WITH C	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SASEOUS EMISSION GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDAR N STANDARD. IDEO	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S)	IN COMPLIANCOM	ANCE WITH C	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SASEOUS EMISSION GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDAR N STANDARD. IDEO	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT I	IN COMPLIANCOM	ANCE WITH C	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SASEOUS EMISSION GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDAR N STANDARD. IDEO	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		AND ALLOWASI
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT I	IN COMPLIANCE COMPLIAN	ANCE WITH C	SION POINT. APPLICABLE PART SULFUR DIOXIDE I SASEOUS EMISSION GASEOUS EMISSION	ICULATE REGULATION EMISSION STANDAR N STANDARD. IDEO	D OF 2000 PPM. D OF 500 PPM. NTIFY GAS		AND ALLOWASL



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	TENESCES DECEDIO			DO NOT WA	TITE IN THIS SPACE
1212 TO:	DIVISION OF AIR POL	IT OF PUBLIC HEALTH	•	j	
1216 121	C2-212 CORDELL HULL			COMPANY NO	1=1 1 1 1 1 1
•	NASHVILLE, TENNESSE			PERMIT NO. L_1	J.J.J.J.P
				PROCESS EMISSIO	N SOURCE NO. LLL
				EMISSION POINT	NO
L. COMPANY I	NAME TENN	ESSEE EASTMAN COM	D A NTV	REVIEWER	
	EMISSION SOURCE NUMBER		IAVI	DATE	_1_1_1
		AS SHOWN ON PROCESS EMI	SSION SOURCE COVER SH	EET) G	
		HEIGHT ABOVE GRADE			FEET.
		R RELEASE MECHANISM AT			FSET.
		110		T GAS VELOCITY	24.4 FT/SEC.
- INDICATE	PERCENT OF TIME OVER 1	25°F25		×.	
SHOW EXIT	GAS VOLUME FLOW RATE	13.3		FT3 /SEC 4 70°F A	ND 1 ATMOS.
SHOW MOIS	STURE CONTENT 4.0	[GR./CU. FT.	DRY GAS AT 70°F) AND	4.6	[GR./CU. FT. GAS AT CONDITIO
. SHOW DIST	TANCE FROM RELEASE POIN	T TO NEAREST PROPERTY L	INE55		FEET.
DIRECTION	OF GAS STREAM AS IT LE	EAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL
. AIR POLLU	TION CONTROL EQUIPMENT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY
PARTICULA	TE	Yes	1964	016	99%
SULFUR DI	OXIDE				
UNIDES OF	NITROGEN				
HYDROCARBO	ons			ŀ	
CARBON MO	NOXIDE				
CASSOUS FI	LUORINES				

IS AN EMISSION MONITORI	NG AND REC	ORDING INST	RUMENT ATTACHED	TO THIS EMISSION	N POIN YES	, MO	X
IF YES, DESCRIBE:							
·							
ADDITIONAL COMMENTS:)	В				•	
-							
							
							•
		•	EMISSION POI	NT DATA			
SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION	POINT:				
	T	1	T				
POLLUTANT	ABSENT	PRESENT	CONCEN	TRATION	AVERAGE	EMISSIONS	METHOD O
POLLUTANT	ABJENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
		v	0.07	GRAINS/SCF	1.0	0.000	
PART ICULATES	х	Х	0.07	AT 70° F	1.0	8,800	Estimate
SULFUR DIOXIDE		<u> </u>		PPM		 	
OXIDES OF NITROGEN	X		 	PPM			
CARBON MONOXIDE	X	<u> </u>		PPM		 	
GASEOUS FLUOPIDES	<u> </u>			FFM			
OTHERS (NAME CHEMICAL)							
Methyl Acetate	<u> </u>	х	0.000042	Lb./Ft.3	2.0	17,600	Analytics
Aceta ldehyde		х	0.000001	Lb./Ft. ³	0.05	425	Analytica
p-Xylene		X	28	ppm	0.10	900	Analytica
Methane		X	145	ppm	0.50	4,600	Analytica
				·	<u> </u>		
			FOR OFFICE	E USE ONLY			
1 0000500 NEIGHT TABLE			CIAN DAINT		•	•	
PROCESS WEIGHT TABLE					·		
EMISSION POINT IS NOT							
EMISSION POINT IS NOT						1	
EMISSION POINT IS NOT							
EMISSION POINT IS NOT	T IN COMPLI	ANCE WITH	GASEOUS EMISSION	N'STANDARD, IDE	NTIFY GAS	·	_ AND ALLOWABLE
							
EMISSION POINT IS NOT			GASEOUS EMISSION	STANDARD. IDE	NTIFY GAS		AND ALLOWABL
EMISSIONS							
CONTINUOUS MONITOR (S	6) FOR (1)		. (2)		; (3)		RECOMMENDED.
METHOD OF MEASUREMENT				•			
METHOD OF MEASUREMENT	IS NOT AC	CEPTABLE.					
EXPLAIN							
EXPLAIN	AR)						•
	AR)		SULFUR DIOXIDE		HY	DROCARBONS	
ABLE EMISSIONS (TONS/YE	· · · · · · · · · · · · · · · · · · ·		SULFUR DIOXIDE		HY		

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Number	,	В-	232-1	L		
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17.	AIR POLLUTION CONTR	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	100%	1.0
	SULPUR DIOXIDE		
	OXIDES OF NITROGEN		
	HYDROCARBONS	0%	2.65
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
19.	AIR POLLUTION CONTR	OL EQUIPMENT COND	ITIONS:
	INLET GAS TEMPERATUR	E, °F 110°	· · · · · · · · · · · · · · · · · · ·
	INLET GAS FLOW RATE,	CFM 13.3	
	EXIT GAS PRESSURE, P	si <u>14.7 p</u>	si
20.	EXIT GAS FLOW RATE	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 13.3



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.	i to:		ENT OF PUBLIC HEALTH			· · · · · · · · · · · · · · · · · · ·		
	r (.);	C2-212 CORDELL HU			COMPANY NO. 1 1-1 1 1 1 1			
		NASHVILLE, TENNES	SEE 37213		PERMIT NO.	P P		
					PROCESS EMISSION	ON SOURCE NO. L		
					EMISSION POINT	NO		
T. .	COMPANY NA	ME TEN	NESSEE EASTMAN COM	PANY '	REVIEWER			
			B-232-1	• • • • • • • • • • • • • • • • • • • •	DATE			
			(AS SHOWN ON PROCESS EMI	SSION SOURCE COVER S	HEET) H			
	INDICÀTE S	TACK OR RELEASE POI	IT HEIGHT ABOVE GRADE	71		FEET		
5.	SHOW INSID	E DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.83		FEET.		
] .	SHOW NORMA	L EXIT GAS TEMPERATE	110	F. 7. SHOW EX	IT GAS VELOCITY	24 FT/SEC.		
_	INDICATE P	ERCENT OF TIME OVER	125°F 25		×.			
5 .	SHOW EXIT	GAS VOLUME FLOW RATE	13.3		FT3 /SEC @ 70°F	AND 1 ATMOS.		
P.	SHOW MOIST	URE CONTENT 4.0	[GR./CU. FT. I	DRY GAS AT 70°F) AND	4.6	_(GR./CU. FT. GAS AT CONDITIO		
ii.	SHOW DISTAI	NCE FROM RELEASE PO	NT TO NEAREST PROPERTY L	INE65		FEET.		
₽.	DIRECTION	OF GAS STREAM AS IT	LEAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL		
13.	AIR POLLUT	ION CONTROL EQUIPMEN	Τ	· · · · · · · · · · · · · · · · · · ·	····			
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE 1	EFFICIENCY		
	PARTICULATE	E	Yes	1966	016	99%		
	SULFUR DIO	KIDE						
	OXIDES OF I	NITROGEN						
	HYDROCARBON	ıs						
	CARBON MONO	OXIDE		·				
	GASEOUS FLU							
•		.						

	IF YES, DESCRIBE:							
15.	ADDITIONAL COMMENTS:							
		, , , , , , , , , , , , , , , , , , ,						
16.	SHOW AIR CONTAMINANT DAT	ra FOR THI		EMISSION POI	NT DATA	<u>, gangangan nang perunggan nang</u>		
;		1			TRATION	AVERACE	EMISSIONS	METHOD
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREN
	PART ICULATES		х	0.07	GRAINS/SCF AT 70° F	1.0	8,800	Estimat
	SULFUR DIOXIDE	х			PPM			
	OXIDES OF NITROGEN	Х			PPM			
	CARBON MONOXIDE	х			РРМ			
	GASEOUS FLUORIDES	х			PPM			
	OTHERS (NAME CHEMICAL)			<u> </u>				
	Methyl Acetate		х	0.000042	Lb./Ft.3	2.0	17,600	Analyti
`	'Acetal dehyde		Х	0.000001	Lb./Ft. ³	0.05	425	Analyti
/	p-Xylene	<u> </u>	Х	28	ppm	0.10	900	Analyti
	Methane		X	145	ppm	0.50	4,600	Analyti
	PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPL	IANCE WITH	APPLICABLE PART SULFUR DIOXIDE I	EMISSION STANDAR	D OF 2000 PPM	•	
	EMISSION POINT IS NOT EMISSIONS EMISSIONS	IN COMPLI	ANCE WITH					_ AND ALLOWAS
	EMISSION POINT IS NOT		_	GASEOUS EMISSION	N STANDARD. IDE	NTIFY GAS	· · · · · · · · · · · · · · · · · · ·	_ AND ALLOWAE
	CONTINUOUS MONITOR (S)	FOR (1)		; (2)		; (3)		RECOMMENDED
	METHOD OF MEASUREMENT	IS ACCEPT	ABLE.					
	METHOD OF MEASUREMENT		-					(\$ ·
	EXPLAIN				** ***********************************			
LLO	WABLE EMISSIONS (TONS/YEA	. •	,					
	PARTICULATES		·	SULFUR DIOXIDE	•	H1	DROCARBONS	
	•							
	c	ARBON MON	OXIDE					

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17.	AIR POLLUTION CONTRO	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	100%	1.0
	SULPUR DIOXIDE		
	OXIDES OF NITROGEN	· ·	
	HYDROCARBONS	0%	3.0
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
	·		
19.	AIR POLLUTION CONTRO	DL EQUIPMENT COND	ITIONS:
	INLET GAS TEMPERATURE	, °F 110°	
	INLET GAS FLOW RATE,	CFM 13.3	·
	EXIT GAS PRESSURE, PS	14.7	psi
20.	EXIT GAS FLOW RATE F	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 13.3



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		S	TACK EMISSION H	<u> POINI DATA - AP</u>	C - 22	
1.		DIVISION OF AIR POI C2-212 CORDELL HULI NASHVILLE, TENNESSI	BUILDING EE 37213 EESSEE EASTMAN COM	PANY	COMPANY NO. L.	
		SSION SOURCE NUMBER				
4.	INDICATE ST	ACK OR RELEASE POINT	AS SHOWN ON PROCESS EMI HEIGHT ABOVE GRADE R RELEASE MECHANISM AT) • <u> </u>	FEET
	•					
9. 10.	SHOW MOISTUING THOW DISTANCE	RCENT OF TIME OVER 1 AS VOLUME FLOW RATE RC CONTENT 2. CE FROM RELEASE POIN	0.53** Gr./cu. FT. T TO NEAREST PROPERTY L	INE 2 @ 110, 2 @ 1:	%. FT ³ /SEC ⊕ 70°F / 2.6 30, 2 @ 155,	AND 1 ATMOS. _{GR./CU. FT. GAS AT CONDITIO
	AIR FOLLOTTO	ON CONTROL EQUIPMENT	AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY
	PARTICULATE	·				
	SULFUR DIOX	IDE				
	OXIDES OF N	ITROGEN				
	HYDROCARBONS	5	Yes	1961 thru 1967	047	90% (Estimate)
	CARBON MONOX	KIDE				
	GASEOUS FLUC	DRIDES				
						
		i		1		

^{*}A total of $\underline{8}$ identical vents comprise this emission source.

^{**}Figures represent flows for one individual vent only. Seven of the eight vents are in operation 24 hrs./dy. Therefore, to obtain total emissions, multiply these figures by 7.

,							
		·					
DDITIONAL COMMENTS: AL	1 the	air cont	aminant data	listed bel	ow are for	one vent or	nly. To
btain total emissi							
peration at all ti							
3							
·			EMISSION POIN	IT DATA			
HOW AIR CONTAMINANT DATA	FOR THIS	S EMISSION	POINT:				
POLLUTANT	ABSENT	PRESENT	CONCENT		. AVERAGE E		METHOD OF
POCEGIAITI	ACCENT.	/ KEGENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
ARTICULATES	x			GRAINS/SCF AT 70° F			1
ILFUR DIOXIDE	X		 	PPM			
			 	PPM			
KIDES OF NITROGEN	_X			PPM		 	-
RBON MONOX IDE	X			PPM		 	
ISEOUS FLUORIDES	_ X	!	 	 		<u> </u>	
THERS (NAME CHEMICAL)				11 /74 3	0.0006*	5 2*	Anglistical
<u>cetaldehyde</u>		X	0.0000003	Lb./Ft.3	0.0006*	5.3*	Analytical
thanol		Х	0.0000006	Lb./Ft. ³	0.0012*	10.5*	Analytical
lethyl Acetate		X	0.000081	Lb./Ft.3	0.15*	1,300*	Analytical
cetic Acid -Propyl Acetate		. X	0.0011 0.000003	Lb./Ft.3 Lb./Ft.3	2.12* 0.006*	18,600* 53*	Analytical Analytical
-Xylene		X	0.000006	Lb./Ft.3	0.012*	105*	Analytical
Flows are for one Multiply by 7 oper		-	FOR OFFICE	USE ONLY			
PROCESS WEIGHT TABLE AF							
PROCESS WEIGHT TABLE AF	IN COMPL	IANUE WITH	APPLICABLE PARTI	ICULATE REGULATI	ON. ALLOWABI	E EMISSIONS	. #
EMISSION POINT IS NOT							#
EMISSION POINT IS NOT I	IN COMPL	IANCE WITH	SULFUR DIOXIDE E	MISSION STANDAR	RD OF 2000 PPM		#
EMISSION POINT IS NOT I	IN COMPL	IANCE WITH	SULFUR DIOXIDE E	MISSION STANDAR	RD OF 2000 PPM. RD OF 500 PPM.		
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I	IN COMPLI	IANCE WITH	SULFUR DIOXIDE E	MISSION STANDAR	RD OF 2000 PPM. RD OF 500 PPM.		
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS	IN COMPLI	IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWAPLE
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSION POINT IS NOT I	IN COMPLIAN COMPLIAN COMPLIAN COMPLIAN COMPLIAN COMPLIAN COMPLIAN COMPLIANCE	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM, RD OF 500 PPM, ENTIFY GAS		AND ALLOWAPLE
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSION POINT IS NOT I EMISSIONS	IN COMPLI	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S)	IN COMPLIANT COM	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (5) METHOD OF MEASUREMENT I	IN COMPLIANT COM	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE
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EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) NETHOD OF MEASUREMENT I	IN COMPLIANT COM	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE
EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSION POINT IS NOT I EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT I	IN COMPLIANT COM	IANCE WITH IANCE WITH IANCE WITH	SULFUR DIOXIDE E SULFUR DIOXIDE E GASEOUS EMISSION GASEOUS EMISSION	MISSION STANDAF MISSION STANDAF I STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE



Proce	ss F	mission	n Sour	ce
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		S	TACK EMISSION	<u>POINT DATA -</u>	APC -	22	
44	IL TO:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING		PERI PROD EMI	PANY NO.L. MIT NO. L. CESS EMISS SSION POIN	WRITE IN THIS SPACE I -
.1.	COMPANY NAM	e ten	IESSEE EASTMAN CON	PANY		IEWER	
2.	PROCESS EMI	SSION SOURCE NUMBER	B-232-1		DATI		
3.	EMISSION PO	INT NUMBER OR CODE	(AS SHOWN ON PROCESS EM	ISSION SOURCE COVER	SHEET)	J*	
4.	INDICATE ST	ACK OR RELEASE POIN	F HEIGHT ABOVE GRADE	31			FEET
	•		OR RELEASE MECHANISM AT				FEET
6.	SHOW NORMAL	EXIT GAS TEMPERATUR	κ <u>115</u>	OF. 7. SHOW E	XIT GAS VEI	.OCITY	7.7** FT/SEC
•	INDICATE PE	RCENT OF TIME OVER 1	125°F 0			x.	
9.	SHOW EXIT G	AS VOLUME FLOW RATE	0.38**		FT ⁵ /	SEC 9 70°F	AND 1 ATMOS.
10.	SHOW MOISTU	RE CONTENT 2.	3 (GR./CU. FT.	DRY GAS AT 70°F) AN	D 2.7		D 1 ATMOS. (GR./CU. FT. GAS AT CONDITION
11.	SHOW DISTANC	CE FROM RELEASE POIN	IT TO NEAREST PROPERTY	LINE 2 @ 110, 2	@ 130, 2	2 @ 155,	FEET.
	·			2 @ 185			H-HOR I ZONTAL
13.	AIR POLLUTIO	ON CONTROL EQUIPMENT					
			AIR CONTAMINANT CONTROLLED	YEAR INSTALLED		TYPE ¹	EFFICIENCY
	PARTICULATE		X	1961-1967		016	99%
	SULFUR DIOXI	0€					
	OXIDES OF NI	TROGEN					
	HYDROCARBONS	<u> </u>					1
	CARBON MONOX	IDE	·				
	GASEOUS FLUC	RIDES					
		· · · · · · · · · · · · · · · · · · ·				·	

^{*}A total of $\underline{8}$ identical vents comprise this emission point.

^{**}These figures represent the velocity and volume flow rates for one vent only. To obtain total, multiply by 7 since only seven of the eight vents are in operation at all times.

IS AN EMISSION MONITORIN IF YES, DESCRIBE:					N POI YES	NO NO	X
· ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT DAT	A FOR THI	S EMISSION	EMISSION POI	NT DATA			
			CONCEN	ITRATION	AVERAGE E	MISSIONS	METHOD O
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
PARTICULATES		х	0.02	GRAINS/SCF AT 70° F	0.03*	260*	Analytic
SULFUR DIOXIDE	Х			РРМ			
OXIDES OF NITROGEN	X			РРМ			
CARBON MONOXIDE	х			РРМ			
GASEOUS FLUORIDES	x		 	PPM	·	<u> </u>	
OTHERS (NAME CHEMICAL)	 ^-	1				<u> </u>	
Acetic Acid	1	Х	0.00014	Lb./Ft.3	0.19*	1 700*	A 2 L 2
Acétone	 	X	0.00004	Lb./Ft.3	0.005*	1,700*	Analytica Analytica
Methyl Acetate	 	<u>x</u>	0.000002	Lb./Ft. ³	0.003*	26*	Analytica
p-Xylene n-Propyl Acetate	<u> </u>	X X	0.000001 0.000001	Lb./Ft.3 Lb./Ft.3	0.0014* 0.0014*	13* 13*	Analytica Analytica
*Figures represent	flows 1	for one	FAR AFF16	C HCC ONLY			
vent only. Multip			ing vents to	E USE ONLY o obtain tota	l emission	•	*
PROCESS WEIGHT TABLE	APPLIES TO	THIS EMIS	SION POINT.				
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	APPLICABLE PART	ICULATE REGULATIO	ON. ALLOWABL	E EMISSIONS	
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE	ÉMISSION STANDAR	0 OF 2000 PPM.		
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	SULFUR DIOXIDE	EMISSION STANDARD	O OF 500 PPM.		
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	GASEOUS EMISSIO	N STANDARD. IDEN	NTIFY GAS		AND ALLOWARL
EMISSIONS							•
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD. IDEN	NTIFY GAS	· · · · · · · · · · · · · · · · · · ·	AND ALLOWABL
CONTINUOUS MONITOR (S)			; (2)		; (3)		RECOMMENDED
METHOD OF MEASUREMENT							
METHOD OF MEASUREMENT							
EXPLAIN							•
WABLE EMISSIONS (TONS/YEA							
PARTICULATES	•	;	SULFUR DIOXIDE		•m	DROCARBONS	
						*	
<u> </u>	ARBON MON	0V:00		_ A-91			

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Supplement to APC-22

17.	AIR POLLUTION CONTR	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	100%	0.03*
	SULPUR DIOXIDE		
	OXIDES OF NITROGEN		
	HYDROCARBONS	0%	0.20*
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
,			
19.	AIR POLLUTION CONTR	OL EQUIPMENT COND	ITIONS:
	INLET GAS TEMPERATUR	E, ^o F115 ^o	·
	INLET GAS FLOW RATE,	CFM 0.38	*
	EXIT GAS PRESSURE, P	51 14.7	psi
20.	EXIT GAS FLOW RATE	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 0.38*

^{*}Figures represent flows for one vent only. Multiply by seven operating vents to obtain total emission.



Proce	ss E	mission	Source
Numbe	r_B	-232-1	
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			THUR LITTOUTON I	OTHI DAIA A	<u> </u>	
7	L To:	TENNESSEE DEPARTMENT DIVISION OF AIR POLICE CONTROL HULLINGS NASHVILLE, TENNESS	L BUILDING		PERMIT NO. L	RITE IN THIS SPACE PON SOURCE NO.
	PROCESS EMI	SSION SOURCE NUMBER	B-232-1 (AS SHOWN ON PROCESS EMIS	<u> </u>	REVIEWER L	
	INDICATE ST	ACK OR RELEASE POINT	T HEIGHT ABOVE GRADE	40		FEET.
5.	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.33	·	FEET.
•	SHOW NORMAL	EXIT GAS TEMPERATUR	æ <u>80</u>		GAS VELOCITY	1.9 FT/SEC.
P	INDICATE PE	RCENT OF TIME OVER I	125°F0		x.	
	SHOW EXIT G	AS VOLUME FLOW RATE	0.17		FT ³ /SEC @ 70°F	AND 1 ATMOS.
	SHOW MOISTU	RE CONTENT	1.2 (GR./CU. FT. (DRY GAS AT 70°F) AND	1.3	(GR./CU. FT. GAS AT CONDITIO
11.			IT TO NEAREST PROPERTY L			
	DIRECTION OF	F GAS STREAM AS IT L	EAVES STACK	U-UP, X	D-DOWN,	H-HOR I ZONTAL
13.	AIR POLLUTIO	ON CONTROL EQUIPMENT	•	•		
			AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE1	EFFICIENCY
	PARTICULATE	·				
	SULFUR DIOX	IDE				
	OXIDES OF N	ITROGEN				
	HYDROCARBONS	5				
	CARBON MONOX	CIDE				
•	GASEOUS FLUC	PRIDES		· · · · · · · · · · · · · · · · · · ·		
,					ļ	
						

IF YES, DESCRIBE:	1	OKU II INSII	COMENT ATTACHED	TO THIS EMISSION	N POI YES	· — · · · · · · · · · · · · · · · · · ·	<u> </u>	
ADDITIONAL COMMENTS:	Plans b	eing for	nulated to	install a ve	nt condens	er on this	stack.	
ADDITIONAL COMMENTS: Plans being formulated to install a vent condenser on this stack.								
•								
***************************************			EMISSION POI	NT DATA				
SHOW AIR CONTAMINANT DAT	A FOR THIS	S EMISSION I	<u> </u>	TOATION	AVEDACE	Directors	METHOD OF	
POLLUTANT	ABSENT	PRESENT	QUANTITY	TRATION	LBS/HR.	EMISSIONS LBS/YEAR	ME THOU OF MEASUREMEN	
DADY ICULATES	X		QUANTIT	GRAINS/SCF AT 70° F	LDG/ NR.	EBO/ TEAR	MEASONCINE	
PART ICULATES	X			PPM				
SULFUR DIOXIDE				PPM		 	+	
OXIDES OF NITROGEN	X			PPM			+	
CARBON MONOXIDE	X			PPM				
GASEOUS FLUORIDES	X	<u> </u>	<u> </u>	 		 	 	
OTHERS (NAME CHEMICAL)	+		0.0057	Lb./Ft. ³	3.5	30,800	Analytica	
Acetaldehyde	 	X	0.0057	Lb./Ft. ³				
Methyl Acetate	 	X	0.0021	Lb./Ft.3	1.30	2,600	Analytica	
n-Propyl Acctate	<u> </u>	X	0.00049	Lb./Ft.3	0.30	175	Analytica Analytica	
Acetic Acid		X	0.000035	ro.\tc.	0.02	117	Allaly Cica	
			CAR ACCIO					
			FOR OFFICE	: USE UNLY				
PROCESS WEIGHT TABLE I	APPLIES TO	THIS EMISS	SION POINT.					
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	PPLICABLE PART	ICULATE REGULATIO	ON. ALLOWAB	LE EMISSIONS		
EMISSION POINT IS NOT	IN COMPL	IANCE WITH S	SULFUR DIOXIDE E	MISSION STANDAR	D OF 2000 PPM	•		
	111 601101	IANCE WITH S	SULFUR DIOXIDE E	MISSION STANDAR	0 OF 500 PPM.	•		
EMISSION POINT IS NOT	IN COMPL					·		
EMISSION POINT IS NOT					NTIFY GAS		AND ALLOWABLE	
	IN COMPLI	ANCE WITH G			NTIFY GAS	·	AND ALLOWABLE	
EMISSION POINT IS NOT	IN COMPLI	IANCE WITH O	SASEOUS EMISSION	STANDARD. IDE		· · · · · · · · · · · · · · · · · · ·		
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S)	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT METHOD OF MEASUREMENT	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT METHOD OF MEASUREMENT	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	
EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT METHOD OF MEASUREMENT EXPLAIN ABLE EMISSIONS (TONS/YEA	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDEI	NTIFY GAS		AND ALLOWABLE	



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	COMPANY NA	OIVISION OF C2-212 CORD NASHVILLE.	DEPARTMENT OF PUBLIC HEAD AIR POLLUTION CONTROL DELL HULL BUILDING TENNESSEE 37213 TENNESSEE EASTMA NUMBER B-232	IN COMPANY		PERMIT NO. L		P
			R CODE (AS SHOWN ON PROC		CE COVER SH	EET). L		
		•	SE POINT HEIGHT ABOVE GR					FEET.
5.	SHOW INSTO	E DIAMETER OF	STACK OR RELEASE MECHAN	IISM AT TOPO.	33			FEET.
δ.	SHOW NORMA	L EXIT GAS TE	MPERATURE 8	5 °F.	. SHOW EXI	T GAS VELOCITY	0.19	FT/SEC.
P	INDICATE P	PERCENT OF TIM	E OVER 125°F	0		x.		
9.	SHOW EXIT	GAS VOLUME FL	OW RATE 0.02	•		FT ³ /SEC # 70°F	AND 1 ATMOS.	
6			0.38 (GR./C					STACK AT CONDITIO
11.	SHOW DISTA	NCE FROM RELE	ASE POINT TO NEAREST PRO	PERTY LINE	180		_ FEET.	
2.	DIRECTION	OF GAS STREAM	AS IT LEAVES STACK	U-UF	, <u>x</u>	D-DOWN, _	H-HOR	IZONTAL
13.	AIR POLLUT	ION CONTROL E	QUIPMENT					
			AIR CONTAMIN CONTROLLE		YEAR STALLED	TYPE 1	EFFICIENCY	
	PARTICULAT	E					·	
	SULFUR DIO	XIDE						
	OXIDES OF	NITROGEN						
!	HYDROCARBO	NS						
	CARBON HON	OXIDE						
	GASSOUS FLE	UNPIDES			·			
	·							
_							·	

Process Emission Source 4 IS AN EMISSION MONITORIN	G AND REC	ORDINU INST	RUMENT ATTACHED			ES NO	X
IF YES, DESCRIBE:							
			 		·····		
5. ADDITIONAL COMMENTS:							
						<u> </u>	·
			EMISSION POI	NT DATA			
6. SHOW AIR CONTAMINANT DAT	A FOR THE	S EMISSION	PO INT:				
ı			CONCEN	TRATION	AVERAGE	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	 		40	GRAINS/SCF	2557 1111	2007 TEAN	
PART ICULATES	<u> </u>	<u> </u>	ļ	AT 70° F	ļ		
SULFUR DIOXIDE	Х	<u> </u>		PPM	ļ		
OXIDES OF NITROGEN	X		 	PPM	ļ		
CARBON MONOXIDE	x			PPM	ļ		
GASEOUS FLUORIDES	Х			РРМ	<u> </u>		
OTHERS (NAME CHEMICAL)							
Mcthyl Acetate	<u> </u>	Х	0.067	Lb./Ft.3	4.1	35,600	Analytical
Acetaldehyde		х	0.24	Lb./Ft. ³	14	125,000	Analytical
n-Propyl Acetate		х	0.015	Lb./Ft.3	0.9	7,900	Analytical
						•	
							
			FOR OFFIC	E USE ONLY			•
PROCESS WEIGHT TABLE	APPLIES TO	THIS EMIS	SION POINT.				
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	APPLICABLE PART	ICULATE REGULAT	ION. ALLOWA	BLE EMISSIONS	#/h
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDA	RD OF 2000 PP	—————————————————————————————————————	
EMISSION POINT IS NOT	IN COMPL	ANCE WITH S	SULFUR DIOXIDE	EMISSION STANDA	RD OF 500 PPM	•	•
EMISSION POINT IS NOT	IN COMPLI	ANCE WITH (GASEOUS EMISSION	N STANDARD. ID	ENTIFY GAS	,	AND ALLOWABLE
EMISSIONS				:	:		,
EMISSION POINT IS NOT	IN COMPLI	ANCE WITH (SASEOUS EMISSION	N STANDARD. IDI	ENTIFY GAS		AND ALLOWABLE
EMISSIONS							
CONTINUOUS MONITOR (S)			; (2)		; (3)	,	RECOMMENDED.
METHOD OF MEASUREMENT							-
METHOD OF MEASUREMENT	IS NOT AC	CEPTABLE.		,			
EXPLAIN		·					· .
LOWABLE EMISSIONS (TONS/YEA	R)						
PARTICULATES		s	ULFUR DIOXIDE			MDROCARBONS	
•	ADDUN MUM	nx ine			_		
LING IS AUTHORIZED BY				. A-96 ·	FLUORIDES		



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Number_	В-	232-1	
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Edition	D		

WAIL TO:	TENNESSEE DEPARTMENT OF DIVISION OF AIR POLLUTIO C2-212 CORDELL HULL BUIL NASHVILLE, TENNESSEE 37	N CONTROL		COMPANY NO. L	RITE IN THIS SPACE
•				t t	NO.
1	•			REVIEWER	·
_	NAME TENNESSE		ANY	DATE L L L	
	EMISSION SOURCE NUMBER				
	POINT NUMBER OR CODE (AS SH				
. INDICATE	STACK OR RELEASE POINT HEIG	HT ABOVE GRADE	27		FEET
5. SHOW INS	IDE DIAMETER OF STACK OR REL	EASE MECHANISM AT TO	OP 0.25		FEET
·					
SHOW NOR	MAL EXIT GAS TEMPERATURE	70	F. 7. SHOW EXIT	GAS VELOCITY	2.2 FT/SEC
INDICATE	PERCENT OF TIME OVER 125°F	0		%.	
9. SHOW EXI	F GAS VOLUME FLOW RATE	0.2		FT ³ /SEC @ 70°F	AND 1 ATMOS.
•					
					•
11. SHOW DIS	STURE CONTENT 2.9 TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES	NEAREST PROPERTY LIN	NE 225		FEET.
2. DIRECTIO	TANCE FROM RELEASE POINT TO	NEAREST PROPERTY LIN	NE 225		FEET.
1. SHOW DIS	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES UTION CONTROL EQUIPMENT	NEAREST PROPERTY LIN	NE 225		FEET.
1. SHOW DIS	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES UTION CONTROL EQUIPMENT A	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
R. DIRECTIO	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES JITION CONTROL EQUIPMENT A ATE	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
PARTICUL SULFUR D	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES JITION CONTROL EQUIPMENT A ATE	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
PARTICUL SULFUR D	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES UTION CONTROL EQUIPMENT A ATE IOXIDE NITROGEN	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
PARTICUL SULFUR D OXIDES OF	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES JION CONTROL EQUIPMENT A ATE JOXIDE F NITROGEN BONS	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
PARTICUL SULFUR D OXIDES OF	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES JITION CONTROL EQUIPMENT A ATE JOXIDE F NITROGEN BONS DNOXIDE	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	FEET. H-HORIZONTAL
PARTICUL SULFUR D OXIDES OF	TANCE FROM RELEASE POINT TO N OF GAS STREAM AS IT LEAVES JITION CONTROL EQUIPMENT A ATE JOXIDE F NITROGEN BONS DNOXIDE	NEAREST PROPERTY LIN STACK X IR CONTAMINANT	U-UP,YEAR	D-DOWN,	H-HORIZONTAL

-							
ADDITIONAL COMMENTS:							
					/ _ / _ / _ / _ / _ / _ / _ / _ / _ / _		
				-,,			
			EMISSION POI	NT DATA			
SHOW AIR CONTAMINANT DA	ATA FOR THE	S EMISSION	POINT:				
			CONCEN	TRATION	AVERAGE	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
				GRA INS/SCF			
PART ICULATES	Х			AT 70° F			
SULFUR DIOXIDE	Х			PPM		<u> </u>	
OXIDES OF NITROGEN	Х	<u> </u>		PPM			
CARBON MONOXIDE	х	<u></u>		PPM			
GASEOUS FLUORIDES	Х			PPM			·
OTHERS (NAME CHEMICAL)							
Acetic Acid		Х	56,700	ppm	3.0	26,300	Vapor Pres Analysis
Carbon Dioxide		Х	28,350	ppm	1.5	13,150	Vapor Pres Analysis
			•	·			
						·	
			FOR OFFIC	E USE ONLY			
7 PROVESS WEIGHT TARIE	ADDI IES TO	TUIC FMIC		E USE ONLY		•	
PROCESS WEIGHT TABLE			SION POINT.			IE EMISSIONS	
EMISSION POINT IS NO	T IN COMPLI	IANCE WITH	SION POINT. APPLICABLE PART	ICULATE REGULAT			#
EMISSION POINT IS NOT	T IN COMPLE	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE	ICULATE REGULAT	RD OF 2000 PPM,		#
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	T IN COMPLI T IN COMPLI T IN COMPLI	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SULFUR DIOXIDE :	ICULATE REGULAT EMISSION STANDAR	RD OF 2000 PPM. RD OF 500 PPM.	•	
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA	IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SULFUR DIOXIDE :	ICULATE REGULAT EMISSION STANDAR	RD OF 2000 PPM. RD OF 500 PPM.	•	
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	T IN COMPLI T IN COMPLI T IN COMPLI	IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SULFUR DIOXIDE : GASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	•	_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SULFUR DIOXIDE : GASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	•	_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IS ACCEPT	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IN COMPLIA T IS ACCEPT	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT EXPLAIN	T IN COMPLIA T IN	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		_ AND ALLOWASLE
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	T IN COMPLIA T IN	IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S IANCE WITH S	SION POINT. APPLICABLE PART SULFUR DIOXIDE : SASEOUS EMISSION SASEOUS EMISSION	ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS		AND ALLOWABLE AND ALLOWABLE RECOMMENDED.



Process Emi	ssion	Source
Number B-23	2-1	
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			THUR LITTOSTON I	חוחע ווונט	1 6 22			
a ti	. †o:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING		COMPANY NO.L_	RITE IN THIS SPACE		
		·.			- 1	ON SOURCE NO.		
					i	NO. [_]		
			•		REVIEWER L	1 4 4		
			NESSEE EASTMAN COM	PANY	DATE L L			
		ISSION SOURCE NUMBER						
Į.	EMISSION PO	DINT NUMBER OR CODE	(AS SHOWN ON PROCESS EMI	SSION SOURCE COVER SHE	ET). N*			
4	INDICATE ST	TACK OR RELEASE POIN	T HEIGHT ABOVE GRADE	21 _		FEET.		
	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.17		FEET		
	SHOW NORMAL	. EXIT GAS TEMPERATU	RE 86	°F. 7. SHOW EXIT	GAS VELOCITY	13.8** FT/SEC.		
			125°F 0		<u></u> %.			
	SHOW EXIT GAS VOLUME FLOW RATE 0.095** FT3 /SEC @ 70°F AND 1 ATMOS.							
20.	SHOW MOISTU	RE CONTENT 2	.9 (GR./CU. FT. (DRY GAS AT 70°F) AND	3.2	{GR./CU. FT. GAS AT CONDITIO		
7.	SHOW DISTAN	ICE FROM RELEASE PO I	NT TO NEAREST PROPERTY L	INE 1 @ 155 & 1	@ 175	FEET.		
g . 1	DIRECTION O	F GAS STREAM AS IT I	LEAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL		
13,	AIR POLLUTI	ON CONTROL EQUIPMEN	τ					
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE ¹	EFFICIENCY		
1	PARTICULATE							
:	SULFUR DIOX	IDE						
	XIDES OF N	ITROGEN						
1	HYDROCARBON	S	·					
9	CARBON MONO	XIDE				·		
9	CASSOUS FLO	OPIDES						
_								
_								
_						والمرابع والمستقيل المستقيل والمستقيل والمستقيل والمستقيل والمستقيل والمستقيل والمستقيل والمستقيل والمستقيل		

^{*}Two identical vents comprise this emission point.

**Figures represent flow for one vent only.

IS AN EMISSION MONITORI	NG AND REC	ORD. INSTR	RUMENT ATTACHED	Page	ION POI YE	s No	$\overline{\mathbf{x}}$
ADDITIONAL CUMMENTS:							
SHOW AIR CONTAMINANT DA	TA FOR THI	S EMISSION F	EMISSION POI	NT DATA			
POLLUTANT	ABSENT	PRESENT	CONCEN	TRATION	AVERAGE	EMISSIONS	METHOD OF
POLLOTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
PART ICULATES	x		ł	GRAINS/SCF			
SULFUR DIOXIDE	х			РРМ			
OXIDES OF NITROGEN	X			PPM			
CARBON MONOXIDE	X			PPM			
GASEOUS FLUORIDES	\ \ \ \ \ \			PPM			
OTHERS (NAME CHEMICAL)	 ^^-						
Acetic Acid		х	90,500	ppm	4.8*	42,000*	Vapor Press Analysis
							111111111111111111111111111111111111111
Figures represent	flow fo	r <u>one</u> ver	nt only.				
PROCESS WEIGHT TABLE EMISSION POINT IS NOT	IN COMPL	ANCE WITH A	ION POINT. PPLICABLE PART				#/h
EMISSION POINT IS NOT					•	•	
EMISSION POINT IS NOT					•		
EMISSION POINT IS NOT			ASEOUS EMISSION	N STANDARD. 1D	ENTIFY GAS		AND ALLOWABLE
EMISSIONS EMISSION POINT IS NOT EMISSIONS	IN COMPLI	ANCE WITH G	ASEOUS EMISSION	N STANDARD. ID	ENTIFY GAS		_ AND ALLOWABLE
CONTINUOUS MONITOR (S			. (2)		. /3)	,	DECOMMENDED
METHOD OF MEASUREMENT			, (2)		· 13/		RECOMMENDED.
METHOD OF MEASUREMENT							
EXPLAIN							
VABLE EMISSIONS (TONS/YE							
PARTICULATES		sı	JLFUR DIOXIDE		HY	*DROCARBONS	. /
•	PADOON MON	27105					
•	JANDUN MUN		· · · · · · · · · · · · · · · · · · ·	A-100	FLUORIDES		



Proces	s E	mis	sion	Source
Number	B-	232	2-1	
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			DIVOK FILIPOTON I	OTHER DITTE	C .22	
77.	IL to:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING		COMPANY NO. L PERMIT NO. L PROCESS EMISSI	RITE IN THIS SPACE
T	COMPANY NA	ME TENI	NESSEE EASTMAN COM	PANY	REVIEWER	
			B-232-1		DATE	
3.			(AS SHOWN ON PROCESS EMI		ET). 0	
	INDICATE S	TACK OR RELEASE POIN	T HEIGHT ABOVE GRADE	21		FEET.
5	•	•	OR RELEASE MECHANISM AT			FEET
-	SHOW NORMA	L EXIT GAS TEMPERATU	RE 94	OF. 7. SHOW EXIT	GAS VELOCITY	2.6 FT/SEC.
å	INDICATE P	ERCENT OF TIME OVER	125°F 0		×.	
Ŋ.	SHOW EXIT	GAS VOLUME FLOW RATE	0.04		FT3 /SEC @ 70°F	AND 1 ATMOS.
.	SHOW MOIST	URC CONTENT3	.0 (GR./CU. FT.	DRY GAS AT 70°F) AND _	3.2	(GR./CU. FT. GAS AT CONDITION
11.	SHOW DISTA	NCE FROM RELEASE POI	NT TO NEAREST PROPERTY L	INE 175		FEET.
} .	DIRECTION	OF GAS STREAM AS IT I	LEAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL
13.	AIR FOLLUT	ION CONTROL EQUIPMENT	Т			
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE1	EFFICIENCY
	PARTICULATE	E				
	SULFUR DIO	X I DE		·		·
	OXIDES OF	NITROGEN				
	HYDROCARBO	NS			<u> </u>	
	CARBON MONO	OXIDE				
	GASEOUS FUL	JCP10ES				
					<u> </u>	

Proc	cess Emission Sour	ce Numb	er		rage		···	•		
14	IS AN EMISSION MONITORI	NG AND REC	ORD. INSTR	UMENT ATTACHED	TO THIS EMISSION	ON POI YES	MO	\mathbf{X}		
	IF YES, DESCRIBE:									
15.	ADDITIONAL COMMENTS:					· · · · · · · · · · · · · · · · · · ·	-			
•••	ADDITIONAL COMMENTS:									
				EMISSION PO	NT DATA					
16,	SHOW AIR CONTAMINANT DA	TA FOR THI	S EMISSION P	OINT:			·····			
				CONCEN	ITRATION	AVERAGE (EMISSIONS	METHOD OF		
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT		
•	PART ICULATES	x			GRAINS/SCF AT 70° F					
•	SULFUR DIOXIDE	x			PPM					
		х			РРМ			 		
_	OXIDES OF NITROGEN CARBON MONOXIDE	$\frac{x}{x}$			PPM	 	 			
•	GASEOUS FLUORIDES	X			PPM		 			
•	OTHERS (NAME CHEMICAL)	1-^-								
•	-Xylene	1	Х	0.0057	Lb./Ft.3	0.84	7,400	Vacor Pressu Analysis		
•								Š		
		1					 			
	-	 		· 	_ 		<u>. L </u>			
· · · · · · · · · · · · · · · · · · ·										
				FOR OFFIC	E USE ONLY					
	PROCESS WEIGHT TABLE	APPLIES TO	THIS FMISS	ION POINT		•				
	EMISSION POINT IS NOT			_	ICHI ATE REGII ATI	ION ALLOWARI	F FMISSIONS	#/hn		
	EMISSION POINT IS NOT									
	EMISSION POINT IS NOT					_				
	EMISSION POINT IS NOT						•	AND ALLOWAPIE		
	EMISSIONS					· · · · · · · · · · · · · · · · · · ·				
	EMISSION POINT IS NOT				N STANDARD. IDE	NTIFY GAS		AND ALLOWABLE		
	EMISSIONS			•						
	CONTINUOUS MONITOR (S) FOR (1)		; (2)		: (3)		RECOMMENDED.		
	METHOD OF MEASUREMENT			 -						
	METHOD OF MEASUREMENT	IS NOT AC	CEPTABLE.					•		
	EXPLAIN									
_LOW!	ABLE EMISSIONS (TONS/YE	AR)								
	PARTICULATES		su	LFUR DIOXIDE			DROCARBONS			
		ADDONE HOW	0.0100							
E 13 3 3 3 4 1/		CARBON MON			. 100-	FLUORIDES		 .		
I LINC	G IS AUTHORIZED BY				A-102DATI	Ľ.				



Process			Source
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n	TENNESSEE DEPARTME	IT OF PUBLIC HEALTH		DO NOT WE	RITE IN THIS SPACE
1 11	DIVISION OF AIR POL	•			
	C2-212 CORDELL HULI			COMPANY NO.L_1	
	NASHVILLE, TENNESSE			PERMIT NO. L_1	P P
				PROCESS EMISSIO	N SOURCE NO.
				EMISSION POINT	NO. []
Ţ	COMPANY NAME TENN	FEEF FACTMAN COM		REVIEWER	
	PROCESS EMISSION SOURCE NUMBER		ANI	DATE	
	EMISSION POINT NUMBER OR CODE (SSION SOURCE COVER SHE	ET). P	
-	INDICATE STACK OR RELEASE POINT	HEIGHT ABOVE GRADE	61		FEET.
5.	SHOW INSIDE DIAMETER OF STACK C	R RELEASE MECHANISM AT 1	rop 0.17	•	FEET.
	SHOW NORMAL EXIT GAS TEMPERATUR		•	GAS VELOCITY	2.6 FT/SEC.
ρ	INDICATE PERCENT OF TIME OVER 1	25°F0		<u> </u>	·
).	SHOW EXIT GAS VOLUME FLOW RATE	0.25		_ FT ³ /SEC @ 70°F A	ND 1 ATMOS.
P .	SHOW MOISTURE CONTENT 2	(GR./CU. FT. (DRY GAS AT 70°F) AND _	23	_(GR./CU. FT. GAS AT CONDITIO
11.	SHOW DISTANCE FROM RELEASE POIN	T TO NEAREST PROPERTY L	INE 195		FEET.
þ.	DIRECTION OF GAS STREAM AS IT L	EAVES STACK X	U-UP,	D-DOWN,	H-HOR I ZONTAL
1 3.	AIR POLLUTION CONTROL EQUIPMENT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFIC IENCY
	PARTICULATE				
3	SULFUR DIOXIDE				
9	OXIDES OF NITROGEN				
. !	HYDROCARBONS		····		
9	CARBON MONOXIDE				
2	CASEOUS FLUORIDES				
-					
				1	

ADDITIONAL COMMENTS:	· · · · · · · · · · · · · · · · · · ·			 		·	
						,	
							
SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION F	EMISSION POI	NT DATA			
	1			TRATION	AVERAGE E	AISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	x			GRAINS/SCF			
PART ICULATES				AT 70° F	<u> </u>		
SULFUR DIOXIDE	X			PPN			
OXIDES OF NITROGEN CARBON MONOXIDE	X			PPM	 		
GASEOUS FLUORIDES	X			PPM	 		
OTHERS (NAME CHEMICAL)	 -						
Methyl Acetate		Х	130	mqq	0.023	200	Analytical
p-Xylene		Х	82	ppm	0.021	185	Analytical
Methane		χ.	2120	ppm	0.081	710	Analytical
							
· · · · · · · · · · · · · · · · · · ·			FOR OFFICE	E USE ONLY			
PROCESS WEIGHT TABLE							
EMISSION POINT IS NO						EMISSIONS	#/hr
EMISSION POINT IS NO	IN COMPL	TANCE WITH S	טברטא טוטאוטב ו	MISSION STANDAR	KU UF SOU PPM.		
EMISSION POINT IS NO	IN COMPL	ANCE WITH G	ASENIS EMISSIN	I STANDADO IN	ENTIEV GAS	•	AND: ALLOWADIE
EMISSION POINT IS NO	I IN COMPL	ANCE WITH G	ASEOUS EMISSION	STANDARD. 1DE	ENTIFY GAS		_ AND ALLOWABLE
EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS							
EMISSION POINT IS NO							
EMISSION POINT IS NO EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSIONS	I IN COMPL	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDE	ENTIFY GAS		AND ALLOWABLE
EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSION POINT IS NO	IN COMPL	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDE	ENTIFY GAS		AND_ALLOWABLE
EMISSION POINT IS NO EMISSION POINT IS NO EMISSIONS EMISSIONS CONTINUOUS MONITOR (S	IN COMPLETE	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDE	ENTIFY GAS		AND_ALLOWABLE
EMISSION POINT IS NO EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLETE	ANCE WITH G	ASEOUS EMISSION	I STANDARD. IDE	ENTIFY GAS		AND_ALLOWABLE
EMISSION POINT IS NO EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	F IN COMPLIES) FOR (1) IS ACCEPT IS NOT AC	ABLE.	ASEOUS EMISSION	I STANDARD. IDE	ENTIFY GAS		AND_ALLOWABLE



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Number_	B-2	32-1	
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			TACK LITTOOTON	I OINI DAIA AI	<u> </u>	
۲.		DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING EE 37217 NESSEE EASTMAN COM	· Pany	PERMIT NO. L	ON SOURCE NO. L.L.
			B-232-1			
₩,	EMISSION PO	INT NUMBER OR CODE	(AS SHOWN ON PROCESS EM	ISSION SOURCE COVER SHEE	T)Q	
8	INDICATE ST	ACK OR RELEASE POIN	T HEIGHT ABOVE GRADE	70		FEET.
Ļ	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.17		FEET.
	5 174 115100	DIAMETER OF STACK	ON NECESSE MECHANISM AT			
J	SHOW NORMAL	EXIT GAS TEMPERATU	RE 70	OF. 7. SHOW EXIT	GAS VELOCITY	0.24 FT/SEC.
<u>-</u>	INDICATE PE	RCENT OF TIME OVER	125°F	0	%.	
			0.0	25		
		AS VOLUME FLOW RATE			FT ³ /SEC @ 70°F	
1	SHOW MOISTU	RE CONTENT	23 (GR./CU. FT.	DRY GAS AT 70°F) AND	23	(GR./CU. FT. GAS AT CONDITION
11.	SHOW DISTAN	CE FROM RELEASE PO II	NT TO NEAREST PROPERTY	LINE 90	······	FEET.
Į.	DIRECTION O	F GAS STREAM AS IT I	EAVES STACK	U-UP, X	D-DOWN,	H-HOR (ZONTAL
<u>13.</u>	AIR POLLUTIO	ON CONTROL EQUIPMEN	Γ			
,			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE1	EFFICIENCY
,	PARTICULATE					
	SULFUR DIOX	IDE			·	
9	XIDES OF N	ITROGEN				
!	HYDROCARBON	S				
9	CARBON MONO	XIDE				
9	CASFOUS FLUC	ORIDES				
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ADDITIONAL COMMENTS:							
And the state of t			EMISSION PO	INT DATA			
SHOW AIR CONTAMINANT D	ATA FOR THE	S EMISSION		MI DATA	• .		
			CONCEN	ITRATION	AVERAGE EM	ISSIONS	METHOD O
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
PART ICULATES	х			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	х			PPM			
OXIDES OF NITPOGEN	х			PPM			
CARBON MONOXIDE	Х			РРМ			
GASEOUS FLUORIDES	х			РРМ			
OTHERS (NAME CHEMICAL)			1				
Methyl Acetate		х	126	maq	0.0022	19	Analytica
p-Xylene		. х	77	ppm	0.002	18	Analytica
Methane		Х	2918	ppm	0.011	96	Analytica
			FOR OFFIC	E USE ONLY			
7 PROCESS WEIGHT TABLE	APPLIES TO	THIS EMIS	SION POINT.		•	•	
EMISSION POINT IS NO	T IN COMPL	IANCE WITH	APPLICABLE PART	ICULATE REGULAT	ION. ALLOWABLE	EMISSIONS	
EMISSION POINT IS NO	T IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDAR	RD OF 2000 PPM.		
EMISSION POINT IS NO	T IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDAR	RD OF 500 PPM.		
EMISSION POINT IS NO	T IN COMPL	ANCE WITH	GASEOUS EMISSIO	N STANDARD. 108	ENTIFY GAS		AND ALLOWASL
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•	L to:	TENNESSEE DEPARTMEN DIVISION OF AIR POL C2-212 CORDELL HULL NASHVILLE, TENNESSE	LUTION CONTROL BUILDING			PERMIT NO. L	RITE IN THIS SPACE I -
Ţ	COMPANY NAM	C MYTHIN	ECCER FLOWING COL	71177		REVIEWER	
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			AS SHOWN ON PROCESS EMI		OVER SHEE	TI. R	
_		•					
			HEIGHT ABOVE GRADE				FEET.
5.	SHOW INSIDE	DIAMETER OF STACK O	R RELEASE MECHANISM AT	TOP 0.1	, 		FEET.
}	SHOW NORMAL	EXIT GAS TEMPERATUR	90	OF. 7. S	HOW EXIT	GAS VELOCITY 2	.9 FT/SEC.
A.	INDICATE PE	RCENT OF TIME OVER 1	25°F0			<u> </u>	•
J.	SHOW EXIT G	AS VOLUME FLOW RATE	0.38			FT3 /SEC 9 70°F.	AND 1 ATMOS.
	SHOW MOISTUI	RC CONTENT 21	(GR./CU. FT.	DRY GAS AT 70°	F) AND	23	(GR./CU. FT. GAS AT CONDITION
1.	SHOW DISTANC	CE FROM RELEASE POIN	T TO NEAREST PROPERTY L	INE	185		_ FEET.
	DIRECTION OF	F GAS STREAM AS IT LE	EAVES STACK	U-UP,	х	D-DOWN,	H-HOR I ZONTAL
3.	AIR POLLUTIO	ON CONTROL EQUIPMENT	<u>:</u>			·	
}			AIR CONTAMINANT CONTROLLED	YEAR INSTALL		TYPE ¹	EFFICIENCY
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	SULFUR DIOX	IDE	·			·	
	OXIDES OF NI	ITROGEN					
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		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE1	EFF	CIENCY
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HYDROCAR	PBONS					
CARBON M	MONOXIDE					
CASEOUS	FLUORIDES			·		·

Process Emission Sour	ce Numb	erB_	535 - T	Page	O1		
4 IS AN EMISSION MONITORIN	NG AND REC	ORDI. INST	RUMENT ATTACHED	TO THIS EMISS	SION POIL YES	NO	X
IF YES, DESCRIBE:						·	
5. ADDITIONAL COMMENTS:			•				
-							
i dai							
6. SHOW AIR CONTAMINANT DA	TA FOR THI	S EMISSION	EMISSION POI	NT DATA		·	
			CONCEN	TRATION	AVERAGE E	MISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
PART ICULATES	X			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	X			PPM			
	X	·		РРМ			
OXIDES OF NITROGEN CARBON MONOXIDE	X		<u> </u>	РРМ	.		
GASEOUS FLUORIDES	X		<u> </u>	РРМ		1	
OTHERS (NAME CHEMICAL)	1-^-			 			
p-Xylene		х	80	ppm	0.03	265	Analytical
Methane		х	6500	ppm	0.4	3500	Analytical
		<u> </u>	· • · · · · · · · · · · · · · · · · · ·				
							· · · · · · · · · · · · · · · · · · ·
			FOR OFFIC	E USE ONLY			
PROCESS WEIGHT TABLE	ADDI IES TI	THIS FUIS	SION POINT				
EMISSION POINT IS NOT			_	ICHI ATE REGII.	ATION ALLOWARI	F FMISSIONS	#/1
EMISSION POINT IS NOT	· · · · · · · · · · · · · · · · · · ·						
EMISSION POINT IS NOT							
EMISSION POINT IS NOT		 ,					AND ALLOWAPLE
EMISSIONS							-
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD.	IDENTIFY GAS		AND ALLOWABLE
EMISSIONS			·				-
CONTINUOUS MONITOR (S			; (2)		; (3)	٠.	RECOMMENDED.
METHOD OF MEASUREMENT							-
METHOD OF MEASUREMENT	IS NOT AC	CEPTABLE.					•
EXPLAIN							
LLOWABLE EMISSIONS (TONS/YE							
PARTICULATES			SULFUR DIOXIDE			DROCARBONS	
ILING IS AUTHORIZED BY	CARBON MON	OX IDE		- A-110 p	FLUORIDES		



Proces	s Emi	ssion	Source
Number	B-23	2-1	
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	S	TACK EMISSION F	<u> - AIAU INIU</u>	APC - 22	
VAIL TO:	TENNESSEE DEPARTMENT DIVISION OF AIR POLE C2-212 CORDELL HULL NASHVILLE, TENNESSE	BUILDING		COMPANY NO. L.L.	
				EMISSION POINT N	
_				REVIEWER 1	1 1
	•	ESSEE EASTMAN COM	PANY	DATE L L	·
,	EMISSION SOURCE NUMBER			π*	
S. EMISSION	POINT NUMBER OR CODE (AS SHOWN ON PROCESS EM!	SSION SOURCE COVER SE	HEET).	
4. INDICATE	STACK OR RELEASE POINT	HEIGHT ABOVE GRADE	70	· · · · · · · · · · · · · · · · · · ·	FEET
5. SHOW INS!	IDE DIAMETER OF STACK O	R RELEASE MECHANISM AT	TOP 0.75 x 0.9	92	FEET
6. SHOW NORM	MAL EXIT GAS TEMPERATUR	E 100	F. 7. SHOW EX	IT GAS VELOCITY 36.	7** FT/SEC
P INDICATE	PERCENT OF TIME OVER 1	25°F0		% .	
9. SHOW EXIT	GAS VOLUME FLOW RATE	25.3**		FT ³ /SEC # 70°F AN	D 1 ATMOS.
					GR./CU. FT. GAS AT CONDITION
•		T TO NEAREST PROPERTY L		_	
	•		1 @ 130		H-HORIZONTAL
3. AIR POLLU	TION CONTROL EQUIPMENT				•
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
PARTICULA	те				
SULFUR DIE	OXIDE				·
OXIDES OF	NITROGEN:				
HYDROCARBO	ons				
CARBON MOR	NOXIDE				
CASEOUS FL	LUOPIDES				
		.		1	

^{*}A total of 4 identical vents comprise this emission source.
**Figures represent flows for one vent only.

		er		-0	of	-	.ou
IS AN EMISSION MONITORI		ORD INSTE	RUMENT ATTACHED	TO THIS EMISSION	ON PO ; YES	NO NO	[X]
ADDITIONAL COMMENTS:						· <u>·········</u>	
, , , , , , , , , , , , , , , , , , ,							
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		······································		· 		
						······································	
			EMISSION PO	INT DATA			•
SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION F	POINT:			. *	
PAI LUYAUT	ancesur.	DOCCENT	CONCE	NTRATION	AVERAGE E	MISSIONS	METHOD O
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREME
	x			GRAINS/SCF			
PARTICULATES				AT 70° F	 		
SULFUR DIOXIDE	<u> </u>			PPM			
OXIDES OF NITROGEN	X			PPM		<u> </u>	
CARBON MONOXIDE	<u> </u>	}		PPM		 	
GASEOUS FLUORIDES	 X				}		-
OTHERS (NAME CHEMICAL)		,,					
		1 X .	5	ppm	. 0.19*	1,700*	Estimate
Acetic Acid				Ppin	<u> </u>	1 -7,100	
Acetic Acid	-			ppm			
				ppm			
*Figures represent	flows f			ppm			
	flows f		ent only.				
	flows f		ent only.	E USE ONLY			
		or <u>one</u> ve	ent only.				
Figures represent	APPLIES TO	or <u>one</u> ve	FOR OFFIC	E USE ONLY			
Figures represent PROCESS WEIGHT TABLE	APPLIES TO	Or one ve	FOR OFFICION POINT.	E USE ONLY ICULATE REGULAT	ION. ALLOWABL		
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT	APPLIES TO	THIS EMISS	FOR OFFICION POINT. PPLICABLE PART	E USE ONLY ICULATE REGULATION EMISSION STANDAR	ION. ALLOWABL		
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT	APPLIES TO IN COMPLI IN COMPLI	THIS EMISS LANCE WITH SHANCE WITH SHANCE	FOR OFFIC ION POINT. PPLICABLE PART ULFUR DIOXIDE	E USE ONLY ICULATE REGULATI EMISSION STANDAR	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM.	E EMISSIONS	
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT	APPLIES TO IN COMPLI IN COMPLI	THIS EMISS LANCE WITH SHANCE WITH SHANCE	FOR OFFIC ION POINT. PPLICABLE PART ULFUR DIOXIDE	E USE ONLY ICULATE REGULATI EMISSION STANDAR	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM.	E EMISSIONS	
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT	IN COMPLIANT COM	OT ONE VE	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ULFUR DIOXIDE ASEOUS EMISSION	E USE ONLY ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. 10E	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWARL
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS	IN COMPLIANT COM	OT ONE VE	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ULFUR DIOXIDE ASEOUS EMISSION	E USE ONLY ICULATE REGULAT EMISSION STANDAR EMISSION STANDAR N STANDARD. 10E	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWARL
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT	APPLIES TO IN COMPLI IN COMPLI IN COMPLI	THIS EMISS IANCE WITH SI IANCE WITH SI IANCE WITH SI IANCE WITH G	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWAPL
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION	IN COMPLIANT COM	OT ONE VE	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWASL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSION POINT IS NOT EMISSIONS CONTINUOUS MONITOR (S)	IN COMPLIANT COM	THIS EMISS LANCE WITH SHANCE WITH SHANCE WITH GA	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWASL
PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS DMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT	IN COMPLIANT COM	THIS EMISS LANCE WITH SHANCE WITH SHANCE WITH GA	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION (2)	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWASL
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT	IN COMPLIANT COMPLIANT COMPLIANT COMPLIANT COMPLIANT SACCEPT	THIS EMISS THIS EMISS TANCE WITH STANCE WI	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION (2)	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS	E EMISSIONS	_ AND ALLOWASL
Figures represent PROCESS WEIGHT TABLE EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT EXPLAIN	IN COMPLIANT COMPLIANT COMPLIANT COMPLIANT COMPLIANT ACCEPTANT ACCEPTANT ACCEPTANT COMPLIANT COM	OT ONE VE	FOR OFFICE TON POINT. PPLICABLE PART ULFUR DIOXIDE ASEOUS EMISSION ASEOUS EMISSION (2)	E USE ONLY ICULATE REGULATE EMISSION STANDAR EMISSION STANDAR N STANDARD. IDE	ION. ALLOWABL RD OF 2000 PPM. RD OF 500 PPM. ENTIFY GAS; (3)	E EMISSIONS	_ AND ALLOWAPL



Process	Emi	ssion	Source
Number_ Page	B-23	2-1	
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Edition	D		

	STACK ETIISSIUN	PUINI DATA - AP	L - ZZ	
VAIL TO: DIV	WESSEE DEPARTMENT OF PUBLIC HEALTH ISION OF AIR POLLUTION CONTROL 212 CORDELL HULL BUILDING WILLE, TENNESSEE 37213	,	COMPANY NO. L.L.	N SOURCE NO.
PROCESS EMISSION	TENNESSEE EASTMAN COM SOURCE NUMBER B-232-1 SUMBER OR CODE (AS SHOWN ON PROCESS EM		REVIEWER LL	با
	R RELEASE POINT HEIGHT ABOVE GRADE	•		FEET
	ETER OF STACK OR RELEASE MECHANISM AT		· · · · · · · · · · · · · · · · · · ·	
	•	•		FEET
. SHOW NORMAL EXIT	GAS TEMPERATURE 70	F. 7. SHOW EXIT	GAS VELOCITY	.80 FT/SEC.
INDICATE PERCENT	OF TIME OVER 125°F 0		<u> </u>	
9. SHOW EXIT GAS VO	LUME FLOW RATE 250		FT3 /SEC @ 70°F AP	ND 1 ATMOS.
•	NTENT 3.3 (GR./CU. FT.		_3.3	GR./CU. FT. GAS AT CONDITION
1. SHOW DISTANCE FR	OM RELEASE POINT TO NEAREST PROPERTY I	INE 435		FEET.
. DIRECTION OF GAS	STREAM AS IT LEAVES STACK X	U-UP,	D-DOWN,	H-HORIZONTAL
3. AIR POLLUTION CO	NTROL EQUIPMENT			
	AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE 1	EFFICIENCY
PARTICULATE				
SULFUR DIOXIDE				
UXIDES OF NITROG	EN			
HYDROCARBONS	Yes	1969	002	66%
CARBON MONOXIDE				· · · · · · · · · · · · · · · · · · ·
GASEOUS FLUORIDE	5			
· •				

Pro	cese Emission Source	e Numb	er B-2	232-1	Page 49	of t	Edition Edition	on <u>u</u>
14	IS AN EMISSION MONITORIN							\mathbf{x}
	IF YES, DESCRIBE:							· .
								<u></u>
15.	ADDITIONAL COMMENTS:						·	
					<u></u>			<u> </u>
			 					<u></u>
16.	SHOW AIR CONTAMINANT DATA	A FOR THI	S EMISSION	EMISSION POI	NT DATA			
		T		COUCE	TDAT ION	AVE DAGE	E EMISSIONS	METHOD OF
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	METHOD OF MEASUREMENT
	PART ICULATES	X			GRAINS/SCF AT 70° F	 		
		X			PPM			
	SULFUR DIOXIDE	 			PPM	- 		
	OXIDES OF NITROGEN	X			PPM			
	CARBON MONOXIDE	 	X	5000	PPM	344	3,012,000	Analytical
	GASEOUS FLUORIDES	X				-		<u> </u>
	Mothers (NAME CHEMICAL)	 	х	0.0003	Lb./Ft.3	270	2,365,000	Analytical
	Methyl Acetate	 	 	151		10.4		
	p-Xylene Acetic Acid		X	11	ppm	0.73	91,000	Analytical Analytical
S.	Acetaldehyde	<u> </u>	X	0.000094	Lb./Ft. ³	84.5	740,000	
	Methane		X	171	ppm	12	105,000	Analytical Analytical
				FOR OFFIC	E USE ONLY			
	PROCESS WEIGHT TABLE A	PPLIES TO	THIS EMIS	SION POINT.				
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH	APPEICABLE PART	ICULATE REGULAT	ION. ALLOWA	ABLE EMISSIONS	#/h
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDA	IRD OF 2000 PF		
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDA	IRO OF 500 PPM	1.	
$\overline{\Box}$	EMISSION POINT IS NOT	IN COMPL	IANCE WITH	GASEOUS EMISSIO	N STANDARD. ID	ENTIFY GAS		AND ALLOWABLE
	EMISSIONS					, .		
	EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD. ID	ENTIFY GAS		AND ALLOWABLE
	. EMISSIONS		*					_
	CONTINUOUS MONITOR (S)			; (2)		; (3)		RECOMMENDED.
	METHOD OF MEASUREMENT							
	METHOD OF MEASUREMENT	IS NOT A	CCEPTABLE.					
	EXPLAIN							
ALLO	DWABLE EMISSIONS (TONS/YEA							
	PARTICULATES		 ;	SULFUR DIOXIDE			FYDROCARBONS	
	•	10000 100	NOVINE			FLUORIDES		
. دود		ARBON MOI				TE TE		
TIL	ING IS AUTIORIZED BY				UA			



Process	Emission	Source
Number_	B-232-1	
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	-		STACK EIIISSIUN	PUINI DATA - A	176 - ZZ		
MY I	il to:	TENNESSEE DEPARTM DIVISION OF AIR P C2-212 CORDELL HU NASHVILLE, TENNES	ILL BUILDING		COMPANY NO. L PERMIT NO. L PROCESS EMISS	WRITE IN THIS SP	
_			nnessee eastman com	Pany	DATE		
			R B-232-1		1	-111 	
3 .	EMISSION PO	DINT NUMBER OR CODE	(AS SHOWN ON PROCESS EM	ISSION SOURCE COVER SHE	ET). V	, , , , , , , , , , , , , , , , , , , 	····
ŀ	INDICATE ST	TACK OR RELEASE POI	NT HEIGHT ABOVE GRADE	45			FEET.
<u>5</u> .	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 0.27 x 1	.4		FEET.
	SHOW NORMAL	. EXIT GAS TEMPERATE	ure 65	F. 7. SHOW EXIT	GAS VELOCITY	0.28	FT/SEC.
ĵ.	INDICATE PE	RCENT OF TIME OVER	125°F 0		×.		
9.	SHOW EXIT O	GAS VOLUME FLOW RATE	0.107		_ FT ³ /SEC @ 70°F	AND 1 ATMOS.	
ŀ	SHOW MOISTU	IRC CONTENT	5.5 (GR./CU. FT.	DRY GAS AT 70°F) AND _	5.9	GR./CU. FT.	GAS AT CONDIT
1.	SHOW DISTAN	CE FROM RELEASE PO	INT TO NEAREST PROPERTY (LINE 345	,	_ FEET.	•
	DIRECTION O	F GAS STREAM AS IT	LEAVES STACK	U_UP, X	D-DOWN,	н	-HOR I ZONTAL
3.	AIR POLLUTI	ON CONTROL EQUIPMEN	NT .				
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE1	EFFICIEN	ICY
	PARTICULATE						
	SULFUR DIOX	IDE					
	OXIDES OF N	ITROGEN				ļ	
	HYDROCARBON	S	Yes	1969	047	50	%
	CARBON MONO	XIDE		·	· · · · · · · · · · · · · · · · · · ·	ļ	·
	GASEOUS FLU	ORIDES .					
			-				
			<u> </u>	·			

Process Emission Sour	ce Numb	er B-2	32-1	Page	of	_ Eatet	vu
14 IS AN EMISSION MONITORIN					N POINT YES	NO	X
15. ADDITIONAL COMMENTS:							
			EMISSION POI	INT DATA			
16. SHOW AIR CONTAMINANT DATE	TA FOR THI	S EMISSION	POINT:		T		
	Ì	}	CONCEN	ITRATION	AVERAGE E	AISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
				GRA INS/SCF			
PARTICULATES	X	<u> </u>	 	AT 70° F			
SULFUR DIOXIDE	X	<u> </u>		PPM			
OXIDES OF NITROGEN	X	<u> </u>	<u> </u>	PPM			
CARBON MONOXIDE	X	<u> </u>		PPM			
GASEOUS FLUORIDES	<u> </u>	·					
OTHERS (NAME CHEMICAL)	 		 				ļ
Acetaldehyde		X	0.0029	Lb./Ft.3	1.1	10,000	Analytical
Methyl Acetate	<u> </u>	х	0.0010	Lb./Ft.3	0.4	3,500	Analytical
n-Propyl Acetate	<u> </u>	х	0.00025	Lb./Ft.3	0.094	800	Analytical
Acetic Acid		X	0.000018	Lb./Ft. ³	0.007	60	Analytical
			FOR OFFIC	E USE ONLY			
·				2 332 3.121			
PROCESS WEIGHT TABLE			•			4	
EMISSION POINT IS NOT							#/hr
EMISSION POINT IS NOT					-		
EMISSION POINT IS NOT				•			
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD. IDE	NTIFY GAS	 	_ AND ALLOWABLE
EMISSIONS							•
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD. IDE	NTIFY GAS		_ AND ALLOWABLE
EMISSIONS					•		
CONTINUOUS MONITOR (S) FOR (1)		; (2)		; (3)		RECOMMENDED.
METHOD OF MEASUREMENT	IS ACCEPT	TABLE.					
METHOD OF MEASUREMENT	IS NOT AC	CEPTABLE.					
EXPLAIN						· · · · · · · · · · · · · · · · · · ·	
MLLOWABLE EMISSIONS (TONS/YE	AR)					•	
PARTICULATES		;	SULFUR DIOXIDE			PROCARBONS	
	CARBON MON	OX IDE			FLUORIDES		
FILING IS AUTHORIZED BY					Ε		



Process	Emis	sion	Source
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3. EMISSION	DIVISION OF AIR C2-212 CORDELL I NASHVILLE, TENNI NAME TI MISSION SOURCE NUMBER POINT NUMBER OR COM	ENNESSEE EASTMAN COME BER B-232-1 DE (AS SHOWN ON PROCESS EMIS	SSION SOURCE COVER SH	COMPANY NO. L PERMIT NO. L PROCESS EMISS EMISSION POINT REVIEWER L DATE L U	
INDICATE	STACK OR RELEASE PO	OINT HEIGHT ABOVE GRADE	11		FEET
5. SHOW INS 1	DE DIAMETER OF STAC	K OR RELEASE MECHANISM AT	0.33		FEET
		TURE 80		T GAS VELOCITY	7.3 FT/SEC
INDICATE	PERCENT OF TIME OVE	R 125°F 0		×.	•
9. SHOW EXIT	GAS VOLUME FLOW RA	TE0.625		FT ³ /SEC @ 70°F	AND 1 ATMOS.
_					GR./CU. FT. GAS AT CONDIT
SHOW DIST	ANCE FROM RELEASE P	OINT TO NEAREST PROPERTY L	INE 395	·	_ FEET.
DIRECTION	OF GAS STREAM AS I	T LEAVES STACK	U-UP,	D-DOWN,	X H-HORIZONTAL
. AIR POLLUT	TION CONTROL EQUIPM	ENT			· · · · · · · · · · · · · · · · · · ·
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
PARTICULAT	π				
SULFUR DIC	OXIDE				
OXIDES OF	NITROGEN				
HYDROCARBO	ONS	Yes	1969	003	50%
CARBON MON	NOXIDE				
GASEOUS FL	LUORIDES				
					

Process Emission Sou	rce Numb	er B-	232-1	Page 53	of.	T Kaic	1011 4
14 IS AN EMISSION MONITOR			RUMENT ATTACHED	TO THIS EMISSIO	ON POILLY Y	ES NO	\square
IF YES, DESCRIBE:					· · · · · · · · · · · · · · · · · · ·		
						 	
15. ADDITIONAL COMMENTS:							
				 			
*** *********************************						····	
			EMISSION POII	NT DATA			
16. SHOW AIR CONTAMINANT DA	ATA FOR THE	S EMISSION	POINT:		·		
· ·	ŀ		CONCEN.	TRATION	AVERAGE	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY .	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
			 	GRA INS/SCF		- 	
PART ICULATES	X	 	ļ	AT 70° F			
SULFUR DIOXIDE	Х			<u> </u>		<u> </u>	
OXIDES OF NITROGEN	X			PPM	ļ	_	
CARBON MONOXIDE	Х	ļ		РРМ	ļ		
GASEOUS FLUORIDES	. х		ļ	PPM	ļ		
OTHERS (NAME CHEMICAL)							
Methyl Acetate		Х	0.0004	Lb./Ft. ³	1.0	8,800	Analytical
Acetaldehyde		Х	0.000024	Lb./Ft. ³	0.053	456	Analytical
Acetic Acid		Х	0.000003	Lb./ft.3	0.007	60	Analytical
p-Xylene	÷	Х	0.00020	Lb./Ft.3	0.45	4,000	Analytical
	•		FOR OFFICE	USE ONLY			
PROCESS WEIGHT TABLE	APPLIES TO	THIS FMISS	SION POINT.		•		
EMISSION POINT IS NO			Ť	ICHI ATE REGII AT I	ION ALLOWA	BLE EMISSIONS	#/n:
EMISSION POINT IS NO							
EMISSION POINT IS NO					•		
EMISSION POINT IS NO	· · · · · · · · · · · · · · · · · · ·						AND ALLOWABLE
EMISSIONS		-		, oranga 102			
EMISSION POINT IS NO			SASFOUS EMUSSION	A STANDARD. IDE	NTIFY GAS		AND ALLOWABLE
			PROCESSO EMISSION	· Oranioano, · roc			
EMISSIONS			. (2)		. (3)		PECOMMENDED
CONTINUOUS MONITOR (; (3)		THE COMMENSES
METHOD OF MEASUREMEN	•	-		,			
METHOD OF MEASUREMEN			•				
EXPLAIN			<u> </u>				
ALLOWABLE EMISSIONS (TONS/Y	-				•	AIMDDOC ADDONIC	
PARTICULATES			SULFUR DIOXIDE	•		HYDROCARBONS	
v.	CARBON MO	NOX IDE		<u>.</u>	FLUORIDES		
THE BUG TO WITHOUTED BY				A-118 DAT	TE .	· ·	



Process	Emis	sion	Source
Number_	B-23	2-1	
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	<u> </u>	7101 2112001011	1 Oziti Dilili Ti			
WEIL TO:	TENNESSEE DEPARTMEN DIVISION OF AIR POL C2-212 CORDELL HULL NASHVILLE, TENNESSE	LUTION CONTROL BUILDING		COMPANY NO. L. PERMIT NO. L. PROCESS EMISSI	ON SOURCE	1 P No.
PROCESS E	NAME TENNI MISSION SOURCE NUMBER POINT NUMBER OR CODE (A	B-232-1 AS SHOWN ON PROCESS EM	ISSION SOURCE COVER SHEE	EMISSION POINT REVIEWER L DATE L L ET). X	للا	FEET
5. SHOW INST	DE DIAMETER OF STACK OF	R RELEASE MECHANISM AT	TOP 0.83		36.7	FEET.
	PERCENT OF TIME OVER 1:			%. FT ³ /SEC @ 70°F	AND 1 ATMOS	S .
II. SHOW DIST	ANCE FROM RELEASE POINT	TO NEAREST PROPERTY L	DRY GAS AT 70°F) AND		FEET.	
	OF GAS STREAM AS IT LE	AVES STACK	U-UP,	D-DOWN, _	^	H_HOR I ZONTAL
-		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFF	FICIENCY
PARTICULA	τς				<u> </u>	
SULFUR DI	OX IDE					
UXIDES OF	NITROGEN					
HYDROCARB	ONS				<u> </u>	·
CARBON MO	NOXIDE				ļ	
GASTOUS FI	LUORIDES					

Pro	ocess Emission Sour	ce Numb	er B	-232-1	Page	of	_ : EQLLA	.ui_ +
14	IS AN EMISSION MONITOR!	NG AND REC	ORUG INSTE	RUMENT ATTACHE		ON PO ? YES	MO	X
15.	ADDITIONAL COMMENTS:							
	ADDITIONAL COMPLICIO							
							· · · · · · · · · · · · · · · · · · ·	
							· 	
	•			EMISSION PO	INT DATA			
16.	SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION F	POINT:		•		
	POLLUTANT	ABSENT	PRESENT	CONCE	ITRATION	AVERAGE EM	IISSIONS	METHOD OF
	·	ABSENT	FRESEIVI	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	DADT ICIÚ ATCC	7			GRAINS/SCF AT 70° F			
	PART ICULATES	X			PPM .	- 		
	SULFUR DIOXIDE				PPM			<u> </u>
•	OXIDES OF NITROGEN CARBON MONOXIDE	- X -			PPM	1		
	GASEOUS FLUORIDES	 X			PPM	1		
	OTHERS (NAME CHEMICAL)	X			 			
	Acetic Acid	+	Х	500	ppm	0.15*	1,300*	Estimate
·	Modern Mark							
					 			
	*Figures based on	480 tota	ıl operat	ing hours p	er year.	<u> </u>		
	:			FOR OFFIC	E USE ONLY		·	
	PROCESS WEIGHT TABLE	ADDLIES TO	TUIC CHICC	ION COLUT	•			
_	EMISSION POINT IS NOT			•	ICH ATC DCCH AT	ION ALLOWADIE	FILLER LONG	# 4.
_	EMISSION POINT IS NOT						EM13310N3	
\vdash	EMISSION POINT IS NOT					•		
	EMISSION POINT IS NOT							AND ALLOWARIE
٠	EMISSIONS			ADECOUG ENTOGYO	ii oranoano.		· · · · · · · · · · · · · · · · · · ·	
	EMISSION POINT IS NOT			ASEOUS EMISSIO	N STANDARD. ID	ENTIFY GAS		AND ALLOWABLE
L	EMISSIONS							_
	CONTINUOUS MONITOR (S			: (2)		: (3)		RECOMMENDED.
	METHOD OF MEASUREMENT		•					
_	→ METHOD OF MEASUREMENT							
·	EXPLAIN		•			•		
ALLO	WABLE EMISSIONS (TONS/YE	AR)						
	PARTICULATES	•	· s	ULFUR DIOXIDE			ROCARBONS	
			•					
		CARBON MON	OXIDE		- A-120	FLUORIDES		
FILI	ING IS AUTHORIZED BY				DA	TE		



Process	Emis	ssion	Source
Number	B-232	2-1	
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				011 271700 4 011	TOMI DAIN A	I O ZZ		
	ik fo:	DIVISION OF	DEPARTMENT OF DE AIR POLLUT ROELL HULL BU TENNESSEE	ILDING		COMPANY NO. L. PERMIT NO. L. PROCESS EMISS EMISSION POIN	I I I I I I I I I I I I I I I I I I I	
<u>, </u>	60 183494 414					REVIEWER		
··				SEE EASTMAN CON		DATE LL		
1			·	B-232-	IISSION SOURCE COVER SHE	ET\ Y*	•	<u> </u>
5.	INDICATE ST	TACK OR RELE	ASE POINT HE	IGHT ABOVE GRADE				FEET.
				115		GAS VELOCITY	7.7**	FT/SEC.
_	INDICATE PE	ERCENT OF TH	ME OVER 125°F	·	0	×.		
,	SHOW EXIT O	GAS VOLUME F	LOW RATE	0.38**		_ FT ³ /SEC @ 70°F	AND 1 ATMOS.	•
1	SHOW MO ISTU	JRE CONTENT	2.31	(GR./CU. FT.	DRY GAS AT 70°F) AND	2.65	(GR./CU. FT	. GAS AT CONDITION
11.	SHOW DISTAN	ICE FROM RELI	EASE POINT TO	NEAREST PROPERTY	LINE 1 @ 350 & 1 @	.380	FEET.	
	DIRECTION O	OF GAS STREAM	M AS IT LEAVE	S STACK	u-up,	D-DOWN,	x	H-HORIZONTAL
13.	AIR POLLUTI	ION CONTROL E	EQUIPMENT			•		
	•			AIR CONTAMINANT CONTROLLED	YEAR Installed	түрг 1	EFFIC	IENCY
	PARTICULATE			Yes	1969	016	99	7%
•	SULFUR DIOX	CIDE						
	OXIDES OF N	NITROGEN				·		
	HYDROCARGON	45					ļ	
	CARBON MONO	XIDE					ļ	
	GASTOUS FLU	JOR LOES			·	ļ	<u> </u>	
							ļ	
						<u> </u>		:

^{*}Two identical vents comprise this emission point.

^{**}Figures represent flows for one vent only.

IS AN EMISSION MONITORIE		•					
ADDITIONAL COMMENTS:							

						·	
			EMISSION POI	INT DATA			
SHOW AIR CONTAMINANT DAT	TA FOR THI	S EMISSION	POINT:				
POLLUTANT	ABSENT	PRESENT	CONCEN	ITRATION	AVERAGE E	MISSIONS	METHOD OF
- OCCOTANT	ACCITI	- ALGENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
		v	0.02	GRAINS/SCF	0.03	062	
PARTICULATES		Х	10.02	AT 70° F	0.03	263	Analytical
SULFUR DIOXIDE	X			PPM			-
OXIDES OF NITROGEN	X	<u> </u>		PPM		 	
CANBON MONOXIDE	X	· ·		PPM	 		
GASERUS FLUDRIDES	X						
OTHERS (NAME CHEMICAL)	 -	<u> </u>		, 3	<u> </u>		
Acetic Acid	 	X	0.00014	Lb./Ft.3	0.19*	1,700*	Analytical
Acetone		Х	0.000004	Lb./Ft.3	0.005*	44*	Analytical
Methyl Acetate		х	0.000002	Lb./Ft.3	0.003*	26*	Analytical
p-Xylene		X	0.000001	Lb./Ft. ³	0.0014*	13*	Analytical
n-Propyl Acetate		X	0.000001	Lb./Ft. ³	0.0014*	13*	Analytical
Figures represent	flows fo	or <u>one</u> ve	ent for offic	E USE ONLY			•
only. PROCESS WEIGHT TABLE	APPLIES TO	THIS EMIS	SION POINT.				· •
EMISSION POINT IS NOT				ICULATE REGULAT	ION. ALLOWARI	E EMISSIONS	· #
EMISSION POINT IS NOT					•	_	 "
EMISSION POINT IS NOT						•	
EMISSION POINT IS NOT							AND ALLOWARIE
				N STANDAND.			AND ALLOWAGE
EMISSIONS BMISSION POINT IS NOT				N 67110400 10	ENTLEN CAR		AND ALLOWADIE
			DASEUUS EMISSIU	N STANDARD. TU	ENTIFY GAS		_ AND ALECTRABLE
EMISSIONS		•				·	DE COMMENDE D
CONTINUOUS MONITOR (S			; (2)		; ⁽³⁾		_ RECOMMENDED.
METHOD OF MEASUREMENT				•	·,		
METHOD OF MEASUREMENT	IS NOT AC	CCEPTABLE.					
			•				
EXPLAIN		 		· · · · · · · · · · · · · · · · · · ·	., , 		
EXPLAIN						·····	

DATE

Process		Em	ission	. Sour	ce
Numbe	r	B-	232-1		
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Supplement to APC-22

17.	AIR POLLUTION CONTRO	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	100%	0.03*
	SULPUR DIOXIDE		·
	OXIDES OF NITROGEN		
	HYDROCARBONS	0%	0.20*
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
	ATD DOLLUTION CONTRO	N FOULDWENT COND	ITIONS 4
19.	AIR POLLUTION CONTRO	•	
	INLET GAS TEMPERATURI	, °F 115°	
	INLET GAS FLOW RATE,	CFM O.	38*
	EXIT GAS PRESSURE, PS	SI <u>14.</u>	7 psi
20.	EXIT GAS FLOW RATE I	ROM STACK AT ACT	JAL FLOW CONDITION, MAXIMUM CFM 0.38*
	*Figures represent f to obtain total emi		only. Multiply by Two operating vents



Process	Emission	Source
Number 1		
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		<u> </u>	STROK ENTOUTOR				
	······································	TENNESSEE DEPARTM	ENT OF PUBLIC HEALTH		DO NOT	WRITE IN THIS SPACE	
VEIL	†9 <u>;</u>	DIVISION OF AIR PO			COMPANY NO.L.	1 - 1 1 1 1	1
		C2-212 CORDELL HUI NASHVILLE, TENNES			1		Þ
						ON SOURCE NO.	1_1
		· 7. 6			1	r NO. LILL	
			•		REVIEWER		
			NESSEE EASTMAN COM		DATE L		
			B-232-1				
3,	EMISSION PO	DINT NUMBER OR CODE	(AS SHOWN ON PROCESS EM	ISSION SOURCE COVER SHE	ET). Z		
4.	INDICATE ST	TACK OR RELEASE POIN	IT HEIGHT ABOVE GRADE	71			FEET.
5,	SHOW INSIDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	TOP 1.0			FEET
6. :	SHOW NORMAL	. EXIT GAS TEMPERATU	RE 115	OF. 7. SHOW EXIT	GAS VELOCITY	16.7	FT/SEC
۵	INDICATE PE	ERCENT OF TIME OVER	125°F	0	%.		
9. :	SHOW EXIT O	GAS VOLUME FLOW RATE	13.	1	_ FT ³ /SEC @ 70°F	AND 1 ATMOS.	
o. :	SHOW MO ISTU	IRC CONTENT	.0 (GR./CU. FT.	DRY GAS AT 70°F) AND	4.6	(GR./CU. FT. GAS	STACK AT CONDIT:0
1. :	SHOW DISTAN	ICE FROM RELEASE POI	NT TO NEAREST PROPERTY L	INE 345	·	_ FEET.	
2. (DIRECTION O	F GAS STREAM AS IT	LEAVES STACK	U-UP,	D-DOWN,	X H-HOR	IZONTAL
3. į	IR POLLUTI	ON CONTROL EQUIPMEN	7				
	•	· :	AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY	
5	PARTICULATE		Yes	1969	016	97.1%	
5	BULFUR DIOX	IDE					
9	XIDES OF N	ITROGEN					
<u>.</u>	YDEOCARBON	ıs					
	ARBON MONO)X I DE					
9	CASEOUS FLU	ORIOES					
_							
•			·				

IS AN EMISSION MONITORI					N PO / YES	s No	x
ADDITIONAL COMMENTS:							
				·			· · · · · · · · · · · · · · · · · · ·
	·					· .	
			•				·
			EMISSION POI	NT DATA		•	
SHOW AIR CONTAMINANT DA	TA FOR THI	S EMISSION	POINT:				
			CONCEN	TRATION	AVERAGE 1	EMISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
				GRAINS/SCF	· ·		1
PART ICULATES		х	.23	AT 70° F	1.5	13,200	Estimate
SULFUR DIOXIDE	x			РРМ			
OXIDES OF NITROGEN	x			РРМ			<u> </u>
CARHON MONGX IDE	x			РРМ			
GASEOUS FLUDRIDES	x			PPM			
OTHERS (NAME CHEMICAL)							
Methyl Acetate		х	0.000042	Lb./Ft.3	2.0	17,500	Analytical
Acetaldehyde		х	0.000001	Lb./Ft.3	0.05	440	Analytica.
p-Xylene	1	х	28	ppm	0.1	885	Analytical
Methane		х	. 145	ppm	0.5	4,500	Analytical
			FOR OFFICE	THE ONLY			
•	•		FOR OFFICE	E USE ONLY			
PROCESS WEIGHT TABLE			•				•
EMISSION POINT IS NO	IN COMPL	ANCE WITH	APPLICABLE PART	ICULATE REGULATIO	ON. ALLOWABI	LE EMISSIONS	#
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	SULFUR DIOXIDE (EMISSION STANDARD	O OF 2000 PPM,	•	
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE 6	EMISSION STANDAR	OF 500 PPM.		
EMISSION POINT IS NO	IN COMPL	ANCE WITH	GASEOUS EMISSION	N STANDARD. IDE	NTIFY GAS		AND ALLOWABLE
EMISSIONS							
EMISSION POINT IS NOT	IN COMPL	ANCE WITH	GASEOUS EMISSION	N STANDARD. IDE	NTIFY GAS		AND ALLOWABLE
EMISSIONS					•		
CONTINUOUS MONITOR (S	6) FOR (1)	· •	; (2)		; (3)		RECOMMENDED.
METHOD OF MEASUREMENT	IS ACCEP	TABLE.					•
METHOD OF MEASUREMEN	IS NOT A	CEPTABLE.		•		•	
							· · · · · · · · · · · · · · · · · · ·
EXPLAIN							
EXPLAIN		•			•		
	(AR)		SULFUR DIOXIDE			YDROCARBONS	

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Number_	B-2	32-1	
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17.	AIR POLLUTION CONTR	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	100%	3.0
	SULPUR DIOXIDE		
•	OXIDES OF NITROGEN		
	HYDROCARBONS	0%	2.65
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
		·	
19.	AIR POLLUTION CONTR	OL EQUIPMENT COND	ITIONS:
-	INLET GAS TEMPERATUR	E, ^o F 115 ^o	
	INLET GAS FLOW RATE,	CFM 13.1	*
	EXIT GAS PRESSURE, P	si 14.7	· · · · · · · · · · · · · · · · · · ·
20.	EXIT GAS FLOW RATE	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 13.1



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		ა	INCK CITTOSTON	LOIMI T	MIN - AF	t - ZZ			
דעש.	. to:	TENNESSEE DEPARTMEN DIVISION OF AIR POL C2-212 CORDELL HULI NASHVILLE, TENNESSE	BUILDING			DO NOT WRITE IN THIS SPACE COMPANY NO PERMIT NO P PROCESS EMISSION SOURCE NO P EMISSION POINT NO			
1.	COMPANY NAM	E TENN	IESSEE EASTMAN CON	MD A NIV		REVIEWER L	للل		
			B-232-1			DATE LLL			
			AS SHOWN ON PROCESS EM		CE COVER SHEET	T) . AA			
_			HEIGHT ABOVE GRADE					FEET.	
5.	SHOW INSIDE	DIAMETER OF STACK O	R RELEASE MECHANISM AT	TOP 0.2	25			FEET.	
	SHOW NORMAL	EXIT GAS TEMPERATUR	E 105	°F。 7	. SHOW EXIT (GAS VELOCITY	15.3	FT/SEC.	
Ê	INDICATE PE	RCENT OF TIME OVER 1	25°F	0		x.			
J .	SHOW EXIT GAS VOLUME FLOW RATE 0.75					FT ³ /SEC 9 70°F AND 1 ATMOS.			
	SHOW MOTSTU	RE CONTENT	20 (GR./CU. FT.	DRY GAS AT	70°F) AND	23	. (GR./CU.	FT. GAS AT CONDITION	
1.	SHOW DISTANC	CE FROM RELEASE POIN	T TO NEAREST PROPERTY	LINE	370	·	_ FEET.		
	DIRECTION OF	F GAS STREAM AS IT L	EAVES STACK	U-UP	·	D-DOWN,	х	H-HORIZONTAL	
3	AIR POLLUTIO	ON CONTROL EQUIPMENT						·	
_			AIR CONTAMINANT CONTROLLED	•	YEAR TALLED	TYPE ¹	EFF	CIENCY	
!	PARTICULATE								
3	SULFUR DIOX	IDE					<u> </u>		
٩	UXIDES OF N	ITROGEN						·	
1	HYDROCARBON	\$							
	CARBON MONO	XIDE					ļ		
. (CASEOUS FLUX	ORIDES .					-		
•	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>								
-				L		L			

Pro	ocess Emission Sour	ce Numb	er	3-232-1	Page	of	. E0102	.On
14	IS AN EMISSION MONITORIN	G AND REC	ORL .G INS	TRUMENT ATTACHED	TO THIS EMISSION	ON PO / YES	NO	X
-		IS AN EMISSION MONITORING AND RECORE .G INSTRUMENT ATTACHED TO THIS EMISSION PO / YES NO _X IF YES, DESCRIBE:						
15.	ADDITIONAL COMMENTS:	<u> </u>						
			 			_ 		
				- 	· 			
	•			EMISSION POI	NT DATA			
16,	SHOW AIR CONTAMINANT DAT	A FOR THI	S EMISSION	POINT:			• .	
							· · · · · · · · · · · · · · · · · · ·	1
•	POLLUTANT	ABSENT	PRESENT		TRATION	AVERAGE E	MISSIONS	METHOD OF
	V OCEO VAILT	ABSCIVI	TACOCITI	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	DADTICH ATTC	х			GRAINS/SCF AT 70° F			
•	PARTICULATES SUB-DIP DIOY IOC	<u> </u>			PPM			
	SULFUR DIOXIDE			 	PPM		 	
	OXIDES OF NITROGEN	X		 	PPM	 		
	CAREON MONOXIDE	X		 	PPM			
	GASEOUS FLUDRIDES	 ^		 	 	 	ļ	
	Acetaldehyde	 -	Х	0.000013	Lb./Ft.3	0.034	300	Analytical
		 	Х	0.000009	Lb./Ft.3	0.025	220	Analytical
	Methyl Acetate Acetic Acid	 	X	0.000003	Lb./Ft.3	0.025	70	Analytical
	p-Xylene	1	X X	0.00003	Lb./Ft. ³	0.08	700	Analytical
	b-varene		A	0.00003	пр./го.	0.00	,00	Analy ordar
				FOR OFFICE	E USE ONLY			
	-			FOR OFFICE	L USE UNLT			
<u> </u>	PROCESS WEIGHT TABLE A			•				
<u> </u>	EMISSION POINT IS NOT						E EMISSIONS	#/hr
<u></u>	EMISSION POINT IS NOT	IN COMPLI	ANCE WITH	SULFUR DIOXIDE (EMISSION STANDAR	RD OF 2000 PPM.		
<u> </u>	_ EMISSION POINT IS NOT	IN COMPLI	ANCE WITH	SULFUR DIOXIDE E	EMISSION STANDAR	RD OF 500 PPM.		
L	EMISSION POINT IS NOT	IN COMPLI	ANCE WITH	GASEOUS EMISSION	N STANDARD. IDE	INTIFY GAS		3JEAWOJJA CNA
	EMISSIONS							4
L	DAISSION POINT IS NOT			GASEOUS EMISSION	N STANDARD. 1DE	ENTIFY GAS		_ AND ALLOWABLE
	EMISSIONS							
<u> </u>	CONTINUOUS MONITOR (S)		•	; (2)		; ⁽³⁾		RECOMMENDED.
	METHOD OF MEASUREMENT							
L	METHOD OF MEASUREMENT			,			÷	•
	EXPLAIN							
ALLO	WABLE EMISSIONS (TONS/YEA	,		A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A. II. A.		***	7000 AD20N0	
	PARTICULATES			SULFUR DIOXIDE			DROCARBONS	
	c	ARBON MO	OX IDE		- A-128	FLUORIDES		·
FIL.	NG IS AUTHORIZED BY				A-1.20	re		

POLLUTION REDUCTION DEVICES OR METHODS

```
000
         No Control Equipment
001
         Wet Scrubber - High Efficiency
002
         Wet Scrubber - Medium Efficiency
003
         Wet Scrubber - Low Efficiency
004
         Gravity Collector - High Efficiency
005
         Gravity Collector - Medium Efficiency
         Gravity Collector - Low Efficiency
006
007
         Centrifugal Collector - High Efficiency
800
         Centrifugal Collector - Medium Efficiency
009
         Centrifugal Collector - Low Efficiency
010
         Electrostatic Precipitator - High Efficiency
         Electrostatic Precipitator - Medium Efficiency
011
012
         Electrostatic Precipitator - Low Efficiency
01.3
         Gas Scrubber
014
         Mist Eliminator - High Velocity
         Mist Eliminator - Low Velocity
015
016
         Fabric Filter - High Temperature
017
         Fabric Filter - Medium Temperature
01.8
         Fabric Filter - Low Temperature
019
         Catalytic Afterburner
020
         Catalytic Afterburner with Heat Exchanger
021
         Direct Flame Afterburner
022
         Direct Flame Afterburner with Heat Exchange
023
         Flaring
027
         Eliminate Coal Combustion
         Eliminate Coal and Residual Fuel Oil Combustion
028
029
         Change all Fuel Use to Natural Gas
039
         Catalytic Oxidation - Flue Gas Desulfurization
040
         Alkalized Alumina
041
         Dry Limestone Injection
042
         Wet Limestone Injection
043
         Sulfuric Acid Plant - Contact Process
         Sulfuric Acid Plant - Double Contact Process
044
045
         Sulfur Plant
047
         Vapor Recovery System (including condensers,
         hooding, and other enclosures)
048
         Activated Carbon Adsorption
049
         Liquid Filtration System
100
         Wet Supperssion System
```

If the system has several pieces of connected equipment, indicate the sequence by, for example, 0008/011; 80%/90%



	Emission Source B-237-1
Page _	la of 13
Edition	Ĝ

PERMIT APPLICATION - APC 20

MA	IL 10:	TENNESSEE DEPARTMENT OF PUBLIC HEALTH DIVISION OF AIR POLLUTION CONTROL CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219			COMPANY I	O NOT WRITE IN	ENCY CODE L	
2.	PERMIT T	D BE ISSUED TO:			i	NTY CODE I_L		
		TENNESSEE EASTMAN COMPA	ANY		l	MISSION SOURCE		
2.	MAIL ING	ADDRESS			EMISSION	PO INT NO. L	با-لب	7
		P. O. Box 511 Kingsport, Tennessee	37662		}		UTM ZON	E
3.	ADDRESS	AT WHICH SOURCE IS TO BE OPERATED:			NS COORD.		لا لا	'
					SIC CODE			
		Same as above.			REVIEWER LLL			
					DATE		7	
	TIME				 			-
٩.		PEGANIZATION: CORPORATION X				2 . 8	. 1 . 5 .	
	EM13311M	SOURCE NUMBER <u>B-237-1</u> 6.	STANDARD	INDUSTRIAL CLASSI	FICATION C	or co. <u>L2 1 0</u>	4,-12,4	
7.	BRIEF DES	CRIPTION OF EMISSION SOURCE FOR WHICH PERMIT	r is desi	RED: <u>Dimethyl</u>	terepht	halate plan	nt No. 1	
								1
8.	LATITUDE	AND LONGITUDE OF AIR CONTAMINANT SOURCE	36°	31 '	24 <u>n</u>	82°	32	15W
9.	COST OF M	ODIFICATION \$COST	OF AIR	POLLUTION CONTROL	EQUIPMENT	\$. 1
0.	IF THIS A	IR CONTAMINANT SOURCE HAS A PREVIOUS WRITTEN	PERMIT	GIVE NAME OF CORPO	RATION, CO	MPANY OR INDI	VIDUAL OWNER	THAT
	OPERATED .	THIS SOURCE AND STATE PREVIOUS TENNESSEE DIV	/ISION OF	AIR POLLUTION CON	TROL PERMI	T NUMBER, IF	KNOWN.	
	NAME -	TENNESSEE EASTMAN COMPANY	I	PERMIT NUMBER				
1.	PRESENT S	TATUS OF AIR CONTAMINANT SOURCE (CHECK AND C	OMPLETE	APPLICABLE ITEMS)				
	TE PE	RMIT TO CONSTRUCT REQUESTED - Est. Starting	Date		Est. Comp	oletion Date _		
	X co	NSTRUCTION COMPLETED - Date _ Dec. 1971		PERMIT TO	OPERATE RE	QUESTED		
	TR	ANSFER OF LOCATION - Est. Date		AIR CONTAM	INANT SOUR	CE HAS NOT BE	EN ALTERED	
2.	ar	e du me de			oct	1 4 1974		
••	SIGNA	TURE OF RESPONSIBLE MEMBER OF FIRM			DATE OF	APPLICATION		
3.		RINT NAME AND OFFICIAL TITLE OF	NAME	J. C.	Edwards			
	FERSON ST	GNING THIS APPLICATION	TITLE	Manage	r, Clear	n Environme	ent Progra	m
			PHONE			ension 2444		
							APC - 20	•



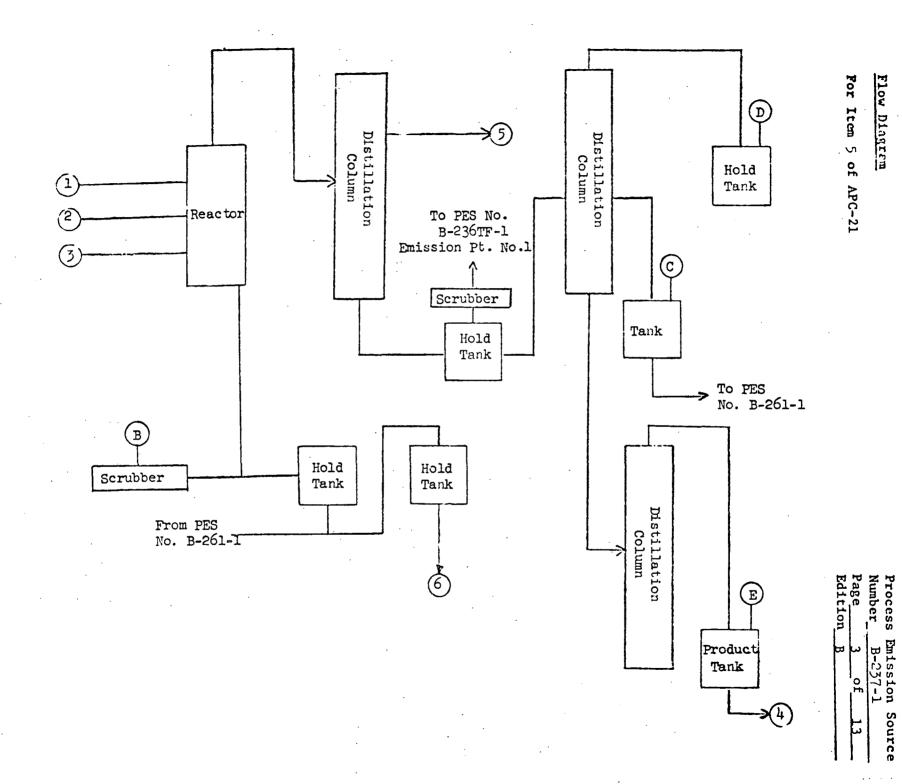
Process			Source
Number_	В-	237-1	
Page	1	of	13
Edition		В	

PROCESS EMISSION SOURCE COVER SHEET - APC 21

					·
	TENNESSEE DEPARTMENT OF PUBLIC HEALTH		DO N	OT WRITE IN THIS	SPACE
MAIL TO:	DIVISION OF AIR POLLUTION CONTROL		COMPANY NO.		
	CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37217		PERMIT NO.		
			PROCESS EMI	SSION SOURCE NO.	للللا
			EMISSION PO	INT NO. L.L.	
			REVIEWER		
			DATE 1		•
COMPANY NAM	TENNESSEE EASTMAN COMPANY				
2. PROCESS EMI	SSION SOURCE NUMBER B-237-1	3. SIC C	ODE 28	315	- YES
DID CONSTRU	CTION OF THIS PROCESS BEGIN ON OR BEFORE AUGUST 9, 1	.969? X YES	NO ON OR B	EFORE APRIL 3, 19	727 X
	F DESCRIPTION OF THE PROCESS ALONG WITH A FLOW DIAGR TRUTS AND EMISSION POINTS SHOULD BE NOTED IN POUNDS		-	POINTS, MATERIA	L INPUTS,
Terep	hthelic acid and methanol are reacted	to produce d	imethyl ter	ephthalate.	The
remaj	nder of the process is distillation to	remove impur	ities.		
NOTE: ATTAI	CH FLOW DIAGRAM FOR PROCESS EMISSION SOURCE CLAIMED	ON SEPARATE SHEE	,		·
TYPE OF PROC	CESS: CONTINUOUS X BAT	сн	COMBINE		
ODERATIONAL	SCHEDULE OF PROCESS EMISSION SOURCE:				
		D N ANNUAL TO	(CUCUT		,
B. DAYS PER		D. % ANNUAL TH		I was woust	T SERT HOLL
•		25.	MARCH-MAY 25	JUNE-AUGUST 25	SEFT-NOV 25
C. VEEKS PE		<u> </u>			1 2)
I. IST MATERIA	AL INPUTS TO PROCESS EMISSION SOURCE:	LBS/OF	PERATING SUR		
		DESTON CAPACITY	LACTUAL	FLOW DIAG	
	OF HEREIT			REFEREN	1CE
A. Methai	**************************************	6100	6100	11	····
	hthalic Acid	15,430	15,430	2	
c. Xylene	e	28	28	3	
0			<u> </u>		
ξ			ļ		·
F.			ļ	ļ	
<u>c.</u>					
TOTAL LUSZCI	PERATING HOUR INPUT TO PROCESS EMISSION SOURCE	21,600	21,600		•
		. (TOTAL ROU SIGNIFICAN	NDED TO THREE. T Figures)	A1	21

APC - 21 REV 5/73

9. LIST MATERIAL OUTPUTS FROM THIS PROCESS	EMISSION SOURCE:			Number B-237-1 Page 2 of 13 Edition B	
		LBS/OPER	ATING .	FLOW DIAGRAM	
NAME OF OUTPUT		CAPACITY	LACTUAL	REFERENCE	
A. Dimethyl Torophthalate		17,800	17,800	l _‡	
B. Water		3010	3010	5	
C. Sludge		230	230	6	
0.					
Ε,					
F					
G	`				
TOTAL LBS/OPERATING HOUR OUTPUT FROM PRO 10. LIST AIR POLLUTION EMISSION POINTS FOR TAPE-22, FOR EACH POINT.		21,000 Source, attach	21,000 A SEPARATE "EM	(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES) ISSION POINT DATA" SHEET,	
EMISSION POINT NO. OR CODE	LBS PARTICULATE/O	PERATING HOUR	FLOW	DIAGRAM REFERENCE	
Α.					
в. В	.015	,)		В	
c. D	0)		D	
D.		·			
Ε.					
F.		<u> </u>	<u></u>		
TOTAL LUS. OF PARTICULATE EMITTED FROM P		E PER OPERATING	HOUR	.015 (TOTAL ROUNDED TO TWO SIGNIFICANT FIGURES)	
1. J.C. EDWARDS	1047		San	u 27.1974	
SIGNATURE OF RESPONSIBLE M	EMBER OF FIRM	·	DATE OF	APPLICATION	
2. TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS FORM	NAME	J. C. Edwar	rds		
	TITLE	Manager, C	lean Enviro	nment Program	
	DATE	JUN 2 7 1974	PI	HONE 246-2111, Ext. 244	
PROCESS EMISSION SOURCE CLAIMED IS ACC	FOR OFFICIAL US	SE ONLY		•	
PROCESS EMISSION SOURCE CLAIMED IS NOT					
RECOMMENDED MAKE UP OF PROCESS EMISSIO		SEPARATE SHEET.			
PROCESS EMISSION SOURCE IS NOT IN COMP					
PROCESS WEIGHT TABLE APPLIES TO THIS P				•	
DIFFUSION EQUATION APPLIES TO THIS PRO			·	ABLE II	
LLOWABLE EMISSIONS	LBS/HOUR	ACTUAL EMISSION	niS	TONS/YEAR	
ILING IS AUTHORIZED BY		DATE			



Sup	plement to APC-21 Form	Number B-237-1 Page 3a of 13 Edition B
13.	NORMAL OPERATING SCHEDULE: 8400 HOURS PER	YEAR.
14.	DATES OF ANY SCHEDULED ANNUALLY OCCURRING SHUTDOWN OF	F OPERATIONS July 1975 - 2 we
15.	DATE (YEAR) INSTALLATION (OR PROCESS) WENT ON LINE	1971
16.	ESTIMATED PERCENT INCREASE OR DECREASE IN PROCESS RATES FOR THE 5 YEARS AFTER THE CALENDAR YEAR FOR WHITE COMPLETED 0%	



Process	Emi	ssion	Source
Number_	B-2	37-1	
Page	4	of	13
Edition	В		

		STACK LITTSSTON F	אואע ווונט	AI C ZZ		
ra l ro:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CONDELL HUL NASHVILLE, TENNESS	L BUILDING	DO NOT WRITE IN THIS SPACE COMPANY NO			
J. COMPANY NA	ame ten	NESSEE EASTMAN COM	REVIEWER			
2. PROCESS EM	MISSION SOURCE NUMBER	В-237-1		DATE		
3. EMISSION P	POINT NUMBER OR CODE	(AS SHOWN ON PROCESS EMI	SSION SOURCE COVER S	HEET).	В	
4INDICATE S	STACK OR RELEASE POIN	T HEIGHT ABOVE GRADE		8	F	EET.
		OR RELEASE MECHANISM AT			F	EET.
•		•				EC.
SHOW NORMA	NL EXIT GAS TEMPERATU	ne 100	F. 7. SHOW EX	IT GAS VELOCITY	7.6 FT/	SEC.
B. INDICATE P	PERCENT OF TIME OVER	125°F	25	%.		
SHOW EXIT	GAS VOLUME FLOW RATE	33	}	FT ³ /SEC @ 70°F	AND 1 ATMOS.	
					(GR./CU. FT. GAS AT COND	ITiJ
		NT TO NEAREST PROPERTY L		•		
DIRECTION	OF GAS STREAM AS IT I	LEAVES STACK U	U_UP,	D-DOWN,	H-HORIZONTAL	
AIR POLLUT	TON COUTROL ECTIEMEN	r				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY	
PARTICUL AT	Ľ.	yes	1969	001	99%	
SULFUR DIO	XIDE					
OXIDES OF	NITROGEN					
HYDROCARBOI	ns		· · · · · · · · · · · · · · · · · · ·			·
CARRON MON	OX IDE					
GASCOUS FLO	UNR IDES					

rocess Emission Sou	rce Numb	er B-23	7-1	Page	5 of 1	3	.011
IS AN EMISSION MONITOR	ING AND REC	ORD INSTE	RUMENT ATTACHED	TO THIS EMISSI	ON POIL YES	NO NO	X
IF YES, DESCRIBE:					<u></u>	· · · · ·	
		·					
ADDITIONAL COMMENTS:							
		·					<u></u>
			·				
			D. (65 (61) D.)	NT 0.T.			
. SHOW AIR CONTAMINANT D	ATA FOR TUI	e muccion s	EMISSION POI	NI DAIA			•
SHOW AIR CONTAMINANT D	ATA FOR THE	3 EM 13510N 1	TOTAL:				<u> </u>
	}		CONCEN	TRATION	AVERAGE 8	MISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
				-GRAINS/SCF	035	146	0-1
PARTICULATES.	-		.001	AT 70° F	.015	140	Calculatio
SULFUR DIOXIDE	+	<u> </u>		PPM	 		
OXIDES OF HITPOGEN	+-	<u> </u>		PP:4	 		
CARBON MONOX IDE	+-			PPM		1	
GASEOUS FLUSPIDES	1-	-					
OTHERS (NAME CHEMICAL)		 				 	
				<u> </u>			
		 	 	 	 	 	
	Makadina kanan kanan kadilah sarah sar		FOR OFFIC	E USE ONLY		·	
PROCESS WEIGHT TABLE			•		1011	E ENTESTONS	#
EMISSION POINT IS NO							
FMISSION POINT IS NO	·						
EMISSION FOINT IS NO							AND ALLOWABLE
EMISSIONS			SASCOUS ENTOSTO	N STARBARD. TO			
DAISSION POINT IS NO			SASFOUS EMISSIO	N STANDARD. ID	ENTIFY GAS	·	AND ALLOWARLE
CMISSIONS			ACCOUG ENTOCTO	·		<u> </u>	······································
CONTINUOUS MONITOR (: (2)		: (3)		RECOMMENDED.
METHOD OF MEASUREMEN							-
METHOD OF MEASUREMEN							
EXPLAIN							
OWARI E EMISSIONS (TONS/Y				· · · · · · · · · · · · · · · · · · ·			
		٠ ,			4.0	VOCALDUANC	•
PARTICULATES			SULFUR DIOXIDE	·		TURUCARBUNS	
PARTICULATES	CARBON MO		SULFUR DIOXIDE			TURUCARBUNS	

	Supplement to APC-22		Number B-237-1 Page 5a of 13 Edition B
17.	AIR POLLUTION CONTR	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	99.0	.13
	SULPUR DIOXIDE		
	OXIDES OF NITROGEN		
	HYDROCARBONS		
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		
			·
19.	AIR POLLUTION CONTR	OL EQUIPMENT COND	ITIONS:
	INLET GAS TEMPERATUR	E, ^o F 120	
	INLET GAS FLOW RATE,	CFM 2160	· · · · · · · · · · · · · · · · · · ·
	EXIT GAS PRESSURE, P	SI11	
20.	EXIT GAS FLOW RATE	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 2090

Process Emission Source



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Edition	В			

Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
MAIL TO:DIVISION OF AIR POLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

ı. TENNESSEE EASTMAN COMPANY

2.	TANK LOCATION:			·	LATITUDE	LONGITUDE
	B-237, 1st:				36 31 23N	82 * 32 * 15 W
3.	TANK IDENTIFICA	TION (NUMBER C	OR NAME):			
	QB-52 (yen	t C)				
4.	TANK CAPACITY!	-	BARPELS		GALLONS 1325	
5.	TASK DIMESTORS	•		8 ft. LEMGTH		
6.	TATE SHAPE:					
7	TANK MATERIALS	LINERICAL X	C PHEIRICAL	OTHER SHAPE	DESCRIBE	
··				OOD CTHER	SPECIFY _	
8.	TANK FAIRT:	CHALKING WHIT	LETT LIGHT GRE	Y OR BLUE	ALUMINUM <u>C'2</u>	
9.	TANK CONDITION:	GOOD 🔼		POCR [
10.		NEW CC	NSTRUCTION	ALTERATION	☐ Not	Applicable
Π.	TYPE OF TARKE	FIXED ROOF	Z PR	ESSURE	INTERNALLY HEAT	red
	UNDERGROUND	☐ FLOATING R	00F 0	PEN TOP IN	SULATED X OT	HER
	(CHECK ALL APPLIC	CABLE)				
17.	IF TANK IS TO HA	AVE FLOATING R	COF, SUPPLY THE	FOLLOWING INFOR	MATION:	
	TYPE OF ROOF:	DOUBLE	DECK	PONTOON	OTHER DESC	CRIBE
	TYPE OF SEAL:	s	INGLE	POUBLE	OTHER DESC	CRIBE
•	TYPE OF SHELL	•			•	
س. ۳	CONSTRUCTION:	R RATIO ALV OTHER	TYPE OF ROOF OR	COVER TOR HOVE	AT ALL), DESCRISE	CRIBE
		THE ACT OTHER	TILE OF MOOF OR	COVER TORE	M Many , basemina	•
п. —	VENT SALVE DATA	E INDICATE TY	PET HUMBERT SET	FINGS AND VAPOR	DISPOSAL: .	
		NUMBER	FRUSTURE SETTING	VACUUM SETTING	DISCH	APGING TO: (CHECK) POR CONTROL FLARE
	COMBINATION	PSV-QB-C		1/2 oz.	KI NOSERIE NA	THE DISTRICT CARD
	PRESSURE		1			
	111.61114					
	VACUM	ļ				
15.	TRAVE ALL LIGHTOS.	VAPORS CASES	OR MIXTURES OF	SICH MATERIALS TO	BE STORED IN THIS	TANK:
•		•				
	AVERAGE MOLECULA	R WEIGHT1	02.2	FOURTHION	50% Methyl I	terephthalate caratoluate cenzcate
	DENSITY:	8.5	LBS/GAL.		1.5% Nethyl	paraformyl benzoate
16,	VERBERATURES AT 1 (NORMAL AVERAGE E				D IN THIS TANK:	•

MINIMUN TEMPERATURE 290 °F

17. SPECIAL VAPOR CONTROLLING 'ICES:				Emission B-237-1	
CONSERVATION VENT OR RELIEF VALVE.			Page	7 of	13
CONDENSER, AVERAGE EXIT GAS TEMPERATURE FROM CONDENSER	••P		Edition	В	
SCRUBBER, AVERAGE ORGANIC CONCENTRATION IN OUTLET SCR	UEBER GAS,	LBS/FT°.			
OTHER THAN ABOVE, EXPLAIN				•	
3.0 ADDRAWYOUT DAMA					
18. OPERATIONAL DATA:					
CONTINUOUS FILLING AND DISCHARGING, AVERAGE DAILY LEVEL FLUCTUATION, AVERAGE DAILY VOLUME FLUCTUATION,	INCHES (FOR VE	RTICAL CYLINDRICAL 1 HORIZONTAL CYLINDRIC	ANKS). AL AND SPH	ERICAL TANK	s).
AVERAGE NUMBER OF CALLONS PER FILLING,					
AVERAGE NUMBER OF FILLS PER YEAR,				•	
19. OPERATIONAL DATA: MAXIMUM FILLING RATE:		UR (OR) 480	G	AL. PER HO	ÜK
AVERAGE CUTAGE: (AVER. DISTANCE FROM TOP	OF TANK TO L	IQUID SURFACE)	6	FT.	
AVFRAGE THROUGHPUT:	BARRELS PER	HOUR (CE)		AL. PER DA	Υ.
TANK TURNOVERS PER YEAR:					
20. IF NATERIAL STORED IS A PETROLEUM PPODUCT OR A FOLLOWING INFORMATION FOR EACH MATERIAL: ATT See Attrobmont				THE	
VAPOR PRESSURE: LBS. REID (C	OP)	LBS. PEP SC.	IE.		
		ILING POINT:		ဂ _F	
21. IF MATERIAL STORED IS A SOLUTION, SUFPLY THE					
NAME OF SOLVENT:	NAME	OF MATERIAL DISSOL	VEC:	 	
CONCENTRATION OF MATERIAL DISSOLVED: BY	WEIGHT (OP) _	BY VOLU	ME (OP)	LPS/GA	ELCON
22. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAINFORMATION:					
IDENTIFY THE MATERIAL:		·			
PRESSUPE AT WHICH NOTERIAL IS STO	PED:	LBS. PER SQ.	IN. GAGE A	1:	<u>—0</u> F
23. ESTIMATED VAPOR LOSS . 10 TONS/YEAR					
THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE FOR FERMIT IS BEING MADE ON THE ACCOMPANYING F	THE USE OF TOORM	HE TANK FOR WHICH A	APFLICATION	N	
SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: TYPE OF PRINT NAME AND CIFICIAL TITLE	J.C.kpi	149 casac	June	27,19	74
OF FERSON SIGNING THIS DATA FORM. NAME:	J. C. Edwa	rds PHC	NE: 246-	2111, Ext	t. 24 44
TITLE.	Manager, C	lean Environmen	t Progra	n	
DO NOT WRITE BELOW	THIS LINE				
COMMENTS:		DO NOT WRIT	E IN THIS	SPACE	
		AIR QUALITY REGIO	or:		
•		AGENCY CODE 1_1	1 1		
		PERMIT NO.	1111		
		REGISTRATION NO.	1 1 1 1	1 1	•
		PROCESS EMISSION	SOLDCE NO	1111	
		EMISSION POINT NO		-) ! ! !	
		ļ		· · · · · · · · · · · · · · · · · · ·	
		UTM ZCNF (IF USE	// Ladad	•	
		EW COCPD.		•	
REVIEWER	-	NE COGPD.			
DATE		SIC COPE			
	Λ_139				

Process Emission Source
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ATTACHMENT NO. 1

No. 20 <u>Material</u>	V.P. @ 300°F (PSIA)	Boiling Point (°F)
Dimethyl terephthalate	14.72	545
Methyl paratoluate	14.82	420
Methyl benzoate	14.96	388
Methyl paraformyl benzoate	14.72	500



Process	Emi	ssion	Source
Number	B-	237-1	
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	STACK CHISSION					
TENNESSEE DEPA	ARTMENT OF PUBLIC HEALTH		DO NOT WRITE IN THIS SPACE			
L TO: DIVISION OF AI	R POLLUTION CONTROL		COMPANY NO.LL	1-11111		
NASHVILLE, TEN	. HULL BUILDING INESSEE •37213		PERMIT NO. L	P		
			PROCESS EMISSIO	N SOURCE NO.		
			EMISSION POINT	NO. []		
COMPANY NAME	TENNESSEE EASTMAN COM	O A NV	REVIEWER			
	MBER B-237-		DATE			
·	ODE (AS SHOWN ON PROCESS EMI		T) .	D		
				·		
,	POINT HEIGHT ABOVE GRADE			FEET		
SHOW INSIDE DIAMETER OF STA	ACK OR RELEASE MECHANISM AT	ТОР	•33	FEET		
SHOW NORMAL EXIT GAS TEMPER	RATURE 153	F. 7. SHOW EXIT	GAS VELOCITY	.0067 FT/SEC		
DICATE PERCENT OF TIME OF	VER 125°F	100	% .			
SHOW EXIT GAS VOLUME FLOW F	RATE .OO	0057	FT ³ /SEC @ 70°F A	ND 1 ATMOS.		
HOW MOTSTURE CONTENT	O (GR./CU. FT.	DRY GAS AT 70°F) AND	00	_(GR./CU. FT. GAS AT CONDITIO		
HOW DISTANCE FROM RELEASE	POINT TO NEAREST PROPERTY L	.INE565	,	FEET.		
DIRECTION OF GAS STREAM AS	IT LEAVES STACK	U-UP, D	D-DOWN,	H-HOR I ZONTAL		
IR POLLUTION CONTROL EQUIP	MENT		•			
	AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY		
PARTICULATE	- 1		TYPE ¹	EFFICIENCY		
	- 1		TYPE 1	EFFICIENCY		
PULFUR DIOXIDE	- 1		TYPE 1	EFFICIENCY		
DLFUR DIOXIDE XIDES OF NITROGEN	- 1	INSTALLED	TYPE 1	EFFICIENCY		
PULFUR DIOXIDE EXIDES OF NITROGEN HYDROCARPONS	- 1	INSTALLED	TYPE 1	EFFICIENCY		
ULFUR DIOXIDE EXIDES OF NITROGEN HYDROCARPONS CARDON MONOXIDE	- 1	INSTALLED	TYPE 1	EFFICIENCY		
PARTICULATE PULFUR DIOXIDE EXIDES OF NITROCEN MYDROCARPORS CARRON MONOXIDE GASCOUS FUUDRIDES	- 1	INSTALLED	TYPE 1	EFFICIENCY		

3.

IS AN EMISSION MONITORING IF YES, DESCRIBE:					ON POIL YES	NO	LX_I
ADDITIONAL COMMENTS:							
			EMISSION DOL	NT DATA			
SHOW AIR CONTAMINANT DATA	FOR THI	S EMISSION	EMISSION POT POINT:	NI DATA			
	1						ALETTION OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	TRATION	AVERAGE E	LBS/YEAR	METHOD OF
		<u> </u>	VUANTITI	GRAINS/SCF	LBS/ HR.	CBS/ TEAR	MEASUREMEN
PART ICULATES				AT 70° F			
SULFUR DIOXIDE				PPM			
OXIDES OF NITROGEN				PPM			
CARBON MONOX IDE	-			PPM			
GASEOUS FLUDRIDES				PPM			
OTHERS (NAME CHEMICAL)	·						
Methyl Paratoluate		~	0.0005	lbs/ft ³	.001	12	Calculation
Methyl Renzoate			0.001	lbs/ft ³	.002	16	Calculation
Xylene			0.0008	lbs/ft ³	.0016	14	Calculation
Nitrogen	•		0.08	lbs/ft ³	.174	1523	Calculation
			FOR OFFICE	E USE ONLY			
			70	a doc oner	•		
PROCESS WEIGHT TABLE AF							
EMISSION POINT IS NOT					-	E EMISSIONS	
EMISSION POINT IS NOT I	·				•		
EMISSION POINT IS NOT					•	•	•
EMISSION POINT IS NOT	IN COMPLI	TANCE WITH	GASEOUS EMISSION	N STANDARD. 1DE	ENTIFY GAS		_ AND ALLOWAEL
EMISSIONS							
EMISSION POINT IS NOT	N COMPL	IANCE WITH	GASEOUS EMISSIO	N STANDARD. IDE	ENTIFY GAS		AND ALLOWARL
EMISSIONS							
CONTINUOUS MONITOR (S)			; (2)		; (3)		RECOMMENDED.
METHOD OF MEARIFEMENT I							
J, METHOD OF MEASUREMENT I							. 4
EXTLAIN	_ 						<u> </u>
PARTICULATES							
			SULFUR DIOXIDE				



Process Number			Sour	c e
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Edition	В	_		

Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH IL TO:DIVISION OF AIR POLLUTION CONTROL CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

	:	•	
1.	TENNESSEE	EASTMAN COMPANY	
٠.			
2.	TANK LOCATION:		LATITUDE LONGITUDE
	B-237, 1st f	loor	36 31 23N 82 32 16W
3.		ON (NUMBER OR NAME):	
	QC-51 (Vent	E)	
4.	TANK CAPACITY:	BARRELS	GALLONS 17,812
5.	TANK DIMENSIONS:		T 14 ft. LENGTH WIDTH
5	TANK SHAPE:	Control of the Contro	
,	CYLI TANK MATERIALS OF	NDRICAL S PHERICAL DOSSERICAL	OTHER SHAPE DESCRIBE
•		STEELCX	WOOD SPECIFY
3.	TANK PAINT:	HALKING WHITE[] LIGHT G	REY OR BLUE ALUMINUM X
·	TANK CONDITION:	APK COLOR OF NO PAINTE	
		GOOD X FAIR	POOR
•	TANK STATUS:	NEW CONSTRUCTION [ALTERATION Not Applicable
•	TYPE OF TALK:		
	• •	FIXED ROOF X	PRESSURE INTERNALLY HEATED
	UNDERGROUND	FLOATING ROOF	OPEN TOP INSULATED X OTHER
	CHECK ALL APPLICA		
•	IF TANK IS TO HAV	E FLOATING ROOF, SUPPLY T	HE FOLLOWING INFORMATION:
	TYPE OF ROOF:	DOUBLE DECK	PONTOON OTHER DESCRIBE
	TYPE, DE SEAL:	SINGLE [POUBLE OTHER DESCRIBE
	TYPÉ OF SHELL	•	
		RIVETER	WELDED OTHER DESCRIBE OR COVER (OR NONE AT ALL), DESCRIBE:
	IF TANK IS TO HAV	E ANY OTHER TYPE OF ROOF	OR COVER (OR HONE AT ALL), DESCRIBE:
	General III - Non-Ambrilla - Marting - Land - Land - Ambrilla - Ambrilla - Ambrilla - Ambrilla - Ambrilla - Amb		
	VENT VALVE DATA:	NUMBER TYPE, NIMBER, G	ETTINGS AND VAFOR DISPOSABLE E VACUUM DISCHAPGING TO: (CHECK)
		SETTIE	STITING ATMOSPHERE VAPOR CONTROL FLARE
	CCMBINATION	PSV-QC-072 3" W.C.	1/2 02.
	PRESSURE		
	VACUM		
	1 500		
 }.	NAME ALL LIQUIDS. V	VAPORS, CASES OR MIXTURES O	F SUCH MATERIALS TO BE STORED IN THIS TANK:
-		, , ,)	corposition (2) 99.95% Dimethyl terephthalat
	AVERAGE NOLECULAR	WEIGHT 194	.05% Methanol
		0 ~	. Opp rectication

(HORMAL AVERAGE DAILY MINIMUM AND MAXIMUM TEMPERATURES)

TYMPHEATURES AT MAICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:

		_		
	•			n Sour
	•	Page	12 of	13
,•r.		Edition	В	,
UEBER GAS,	LBS/FT°.			:
	والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة		•	
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				s).
	.*			
	r (or) 8820	G.	AL. PER HOU	JK
				,
BARPELS PER	HOUR (OR)	G;	AL. PER DAY	ť
O.V. OCUEE TVDE	ON COCNIC MATERI	At CLDDIV	, ,	
ACH ADDITIONAL	rerephthalate l 29.4 LBS. PLF SQ.	YH42	TRE	
)F	
NAME (DF MATERIAL DISSOL	ME (OP)	LPS/GA	- LLON_
	-		,	OWING On
PED:	UES. PER SQ.	IN. GAGE A		
OKM		,		021
	1/7			2/1/
Manager, C			•	
TRIS LINE	DO NOT UDI	IF THE PUTC	co.cc	
			J	•
		1 1	' ,	
	REGISTRATION NO.			
	PROCESS EMISSION	SOUPCE NO		
	EMISSION POINT N	-لللاه	لللا	
	UTM ZONE (IE USE	اللا ١٥		•
	EW COCPD.	لللب		
	NE COGPD.			
_	SIC COPE			
•				
	INCHES (FOR VERCU. FT. (FOR HE CO. FT. (FOR HE CO. FT. (FOR HE CO. FT. (FOR HE CO. FOILOWING INFORMATION OF MAME (CO. FOILOWING INFORMATION OF MAME (CO. FOILOWING INFORMATION OF CO. FOILOWIN	CU. FT. (FOR HORIZONTAL CYLINDRIC CARRELS PER HOUR (OR) BARRELS PER HOUR (OR) BARRELS PER HOUR (OR) MAY OTHER TYPE OF CREANIC MATERITACH ADDITIONAL SHEETS, IF NECES Dimethyl Terephthalate 1 OR) Methanol 29.4 Lbs. Per sc. INITIAL BOILING POINT: Metha FOLLOWING INFORMATION: NAME OF MATERIAL DISSOL WEIGHT (OR) SWHICH IS NOT A PETROLEUM PPOP ORM J. C. Edwards Manager, Clean Environment THIS LINE DO NOT WRITT AIR QUALITY REGIONALITY RE	Number Page Edition "F. UEBER GAS, LBS/FT". INCHES (FOR VERTICAL CYLINDRICAL TANKS). CU. FT. (FOR HORIZONTAL CYLINDRICAL AND SPHE DARRELS PER HOUR (OR) 8820 GF OF TANK TO LIQUID SURFACE) 14 BARPELS PER HOUR (OR) GF TACH ADDITIONAL SHEETS, IF NECESSARY Dimethyl Terephthalate 15.08 PINT INITIAL BOILING POINT: Methanol 144 FOLLOWING INFORMATION: NAME OF MATERIAL DISSOLVED: WEIGHT (OR) A BY VOLUME (OR) SWHICH IS NOT A PETROLEUM PPOPUCT, SUPPLY THE USE OF THE TANK FOR WHICH APPLICATION ORM J. C. Edwards PHONE: 246-2 Manager, Clean Environment Program THIS LINE DO NOT WRITE IN THIS AIR QUALITY REGION 1 PROCESS EMISSION SOUPCE NO. EMISSION POINT NO. 1 PROCESS EMISSION SOUPCE NO. EMISSION POINT NO. 1 UTM ZONF (IF USED) 1 EW COOPD. 1 EW COOPD. 1 NS COOPD. 1	INCHES (FOR VERTICAL CYLINDRICAL TANKS). CU. FT. (FOR HORIZONTAL CYLINDRICAL AND SPHERICAL TANKS). CAL. PFR HORIZONTAL CYLINDRICAL AND SPHERICAL TANKS. CAL. PFR HORIZONTAL CYLINDRICAL TANKS. CAL. PFR HORIZONTAL



Process	Emission	Source
Number	B-237A-1	
Page 1 c		
Edition	В	

APC - APS

PERMIT APPLICATION - APC 20

							
	TENNESSEE DEPARTMENT OF PUBLIC HEALTH			D	O NOT WRITE II	N THIS SPACE	
MAIL TO:	DIVISION OF AIR POLLUTION CONTROL			COMPANY	NO		
	CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219			AQCR L	Al Al	GENCY CODE	لـلـا
PERMIT	TO BE ISSUED TO:			NEDS COU	NTY CODE I		
				PERMIT N	٠. ــــــــــــــــــــــــــــــــــــ	لا لىل	l
	TENNESSEE EASTMAN CO	MATIC		PROCESS	EMISSION SOUR	CE NO.	
MAIL INC	G ADDRESS			EMISSION	POINT NO. L	ــــا - لـــــــــــــــــــــــــــــــ	
	P. O. Box 511			CITY COD	E	UTM ZONE	
	Kingsport, Tennesse	e 37662		EW COORD			
DORESS	S AT WHICH SOURCE IS TO BE OPERATED:			NS COORD	. L.L.L	ا لا ل	
-	Same as above.			SIC CODE	للللا		
	same as above.			REVIEWER	للللا		•
. .				DATE L	 _	_1	
LATITUN	E AND LONGITUDE OF AIR CONTAMINANT SOURCE	36 °	31'	24 N	82°	32	14"W
_	MODIFICATION \$						-4
	AIR CONTAMINANT SOURCE HAS A PREVIOUS WR D THIS SOURCE AND STATE PREVIOUS TENNESSEE TENNESSEE EASTMAN COMPAN	E DIVISION OF I					THAT
PRESENT	STATUS OF AIR CONTAMINANT SOURCE (CHECK A	AND COMPLETE A	PPLICABLE ITEMS	}			
	PERMIT TO CONSTRUCT REQUESTED - Est. Star	ting Date		Est. Com	pletion Date		
X	CONSTRUCTION COMPLETED - Date 196	5	PERMIT TO	O OPERATE RI	EQUESTED		
	TRANSFER OF LOCATION - Est. Date		AIR CONT	AMINANT SOU	RCE HAS NOT BE	TEN ALTERED	
• 0	Porte on As-	,		الزاز	2 4 1074		
3/15	NATURE OF RESPONSIBLE MEMBER OF FIRM			DATE O	F APPLICATION	······································	
	PRINT NAME AND OFFICIAL TITLE OF SIGNING THIS APPLICATION	NAME	J. C.	Edwards		•	
			34.				n ·
	•	TITLE	manag	er, Clea	n Environm	ent Program	••

A-145



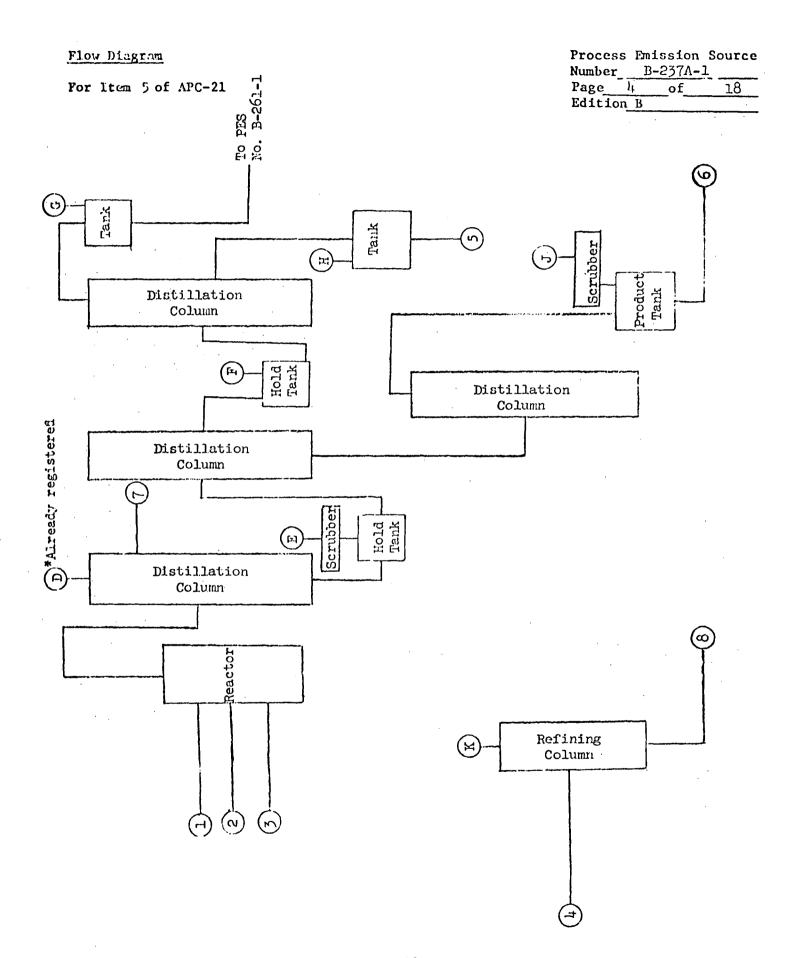
Proces	S	Emission	Source
Number		B-257A-1	.
Page_	2	of	18
Editio	חו	В	

PROCESS EMISSION SOURCE COVER SHEET - APC 21

	TENNESSEE DEPARTMENT OF PUBLIC HEALTH		. DO N	OT WRITE IN THIS	SPACE
NY IF	L 19: DIVISION OF AIR POLLUTION CONTROL CORDELL HULL BUILDING C2-212		COMPANY NO.		
	NASHVILLE, TENNESSEE 37217		PERMIT NO.		
		•	PROCESS EMI	SSION SOURCE NO.	للللا
			EMISSION PO	INT NO.	
			REVIEWER		•
			DATE		
	COMPANY NAME TENNESSEE EASTMAN COMPANY	•	<u> </u>	02.5	
	PROCESS EMISSION SOURCE NUMBER B-237A-1			815	- YES
	DID CONSTRUCTION OF THIS PROCESS BEGIN ON OR BEFORE AUGUST 9, 19			•	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	GIVE A BRIEF DESCRIPTION OF THE PROCESS ALONG WITH A FLOW DIAGRA MATERIAL OUTPUTS AND EMISSION POINTS SHOULD BE NOTED IN POUNDS F		·	POINTS, MATERIAL	. INPUTS,
	Terephthalic acid and methanol are reacted t	4		onhthalate	The
•	remainder of the process is distillation to a				11.0
•	remainder of who process is discretization of a	. Cincy C Simpara	OTCD:		
i	NOTE: ATTACH FLOW DIAGRAM FOR PROCESS EMISSION SOUNCE CLAIMED C	ON SEPARATE SHEET	•		
· ·	TYPE OF PROCESS: CONTINUOUS X BATC	сн 🔲	COMBINE		
. (OPERATIONAL SCHEDULE OF PROCESS EMISSION SOURCE:	• .			1
	A. HOURS PER DAY 24	D. % ANNUAL TH	RUPUT	·	
E	B. DAYS PER WEEK	DEC-FEB	MARCH-MAY	JUNE-AUGUST	SEPT-MOV
, c	C. WEEKS PER YEAR 50	25	25	25	25
. լ	LIST MATERIAL INPUTS TO PROCESS EMISSION SOURCE:				
		LBS/OP HO	ERATING UR	FLOW DIAG	SPAM
	NAME OF INPUT	DESIGN CAPACITY	LOADING	REFEREN	
A	Methanol	4270	4270	1_	
6	4. Terephthalic Acid	10,800	10,800	5	
9	Xylene	24	24	3	
0	o. Crude Methanol Food	90,000	90,000	4	
E					3
F	•		·		•
9	j.				
6	FOTAL LBS/OPERATING HOUR INPUT TO PROCESS EMISSION SOURCE	105,000	105,000		

(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)

9. TIST MATERIAL OUTPUTS FROM THIS PROCES	S EMISSION SOURCE:			Number B-237A-1 Page 3 of 18 Edition B
NAME OF OUTPUT		LBS/OFI	ERATING UR	FLOW DIAGRAM REFERENCE
		CAPACTY	Fective	
A. Methyl paraformyl benzoate	е	77	77	5
. Dimethyl Terephthalate		12,500	12,500	6
C. Water		5100	5700.	7
. Methanol		89,400	89,400	8
Ε,				
* .				
G.				
TOTAL LESSOPERATING HOUR OUTPUT FROM P	ROCESS EMISSION SOURCE	104,000	104,000	(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)
APC-22, FOR EACH POINT.	THIS PROCESS EMISSION S	SOURCE. ATTAC	H A SEPARATE	·
EMISSION POINT NO. OR CODE	LBS PARTICULATE/OF	PERATING HOUR	f	FLOW DIAGRAM REFERENCE
_A. D*,E,G,K		0	D	*,E,G,K
в. Ј		0	J	
c.				
0.				
ε.				
TF.				
TOTAL LES. OF PARTICULATE EMITTED FROM	PROCESS EMISSION SOURCE	E PER OPERATING	3 HOUR	0
NOTE: ATTACH ADDITIONAL SHEETS AS REQUIRE				(TOTAL ROUNDED TO THO
*Already registered				\$1GNIFICANT FIGURES)
- J.C. EDWAPDS,	10119		Sien	10 27 197cl
SIGNATURE OF RESPONSIBLE			DATE	OF APPLICATION
OF PERSON SIGNING THIS FORM	NAME	J. C. Edwa	ards	
	TITLE	Manager,	Clean Env	ironment Program
	DATE	JUN 2 7 197	14	PHONE 246-2111, Ext. 244
L ,	FOR OFFICIAL USE	ONLY		
PROCESS EMISSION SOURCE CLAIMED IS A	CCEPTABLE.			•
PROCESS EMISSION SOURCE CLAIMED IS N	OT ACCEPTABLE.			÷
MECOMMENDED MAKE UP OF PROCESS EMISS			•	
PROCESS, EMISSION SOURCE IS NOT IN CO	MPLIANCE WITH APPLICABLE	E REGULATIONS.		
PROCESS WEIGHT TABLE APPLIES TO THIS	PROCESS EMISSION SOURCE	E.		
DIFFUSION FQUATION APPLIES TO THIS P	ROCESS EMISSION SOURCE.	TVD	LE I	TABLE II
OWARLE EMISSIONS	L.BS/HOUR	ACTUAL EMISSI	ONS	TOUS/YEAR
ILING IS AUTHORIZED BY		DATE		





Process	Emission	Source
Number_	B-237A-1	
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_				DO HOT W	RITE IN THIS SPACE
ינין אַע	TENNESSEE DEPARTMEN DIVISION OF AIR POL	NT OF PUBLIC HEALTH			
	C2-212 CORDELL HULL			COMPANY NO.	
	NASHVILLE, TENNESSE	EE 37219		PERMIT NO.	
				PROCESS EMISSI	ON SOURCE NO. LL
•				EMISSION POINT	NO.
1. COMPANY NA	ME TENN	IESSEE EASTMAN COM	DANIV	REVIEWER	
2PROCESS_EM		B-237A-		DATE	
		AS SHOWN ON PROCESS EMI		ET).	E
4. INDICATE S	STACK OR BLIEASE POINT	HEIGHT ABOVE GRADE		48	FEET.
5. SHOW INSTO	DI DIAMETER OF STACK O	R RELEASE MECHANISM AT	TOP	.25	FEET.
G. SHOW NORMAL	L EXIT GAS TEMPERATUR	e <u>68</u>	F. 7. SHOW EXIT	GAS VELOCITY	.099 FT/SEC.
8. INDICATE P	ERCENT OF TIME OVER 1	25°F	0	×.	
SHOW EXIT	GAS VOLUME FLOW RATE	.00119		FT ³ /SEC @ 70°F /	AND 1 ATMOS.
OSHOW MOIST	UNI CONTENT O	(GR./CU. FT. I	DRY GAS AT 70°F) AND _	0	(GR./CU. FT. GAS AT COMDITION
I. SHOW DISTAL	NCE FROM RELEASE POIN	T TO NEAREST PROPERTY L	INE46	50	FEET.
PIRECTION C	OF GAS STREAM AS IT LI	EAVES STACK	U-UP, D	D-DOWN,	H-HORTZONTAL
5. AHC POLIUT	TON CONTROL EQUIEMENT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFF IC IENCY
PARTICULATE			1970	.001	100%
SOLFUR DIO	X IUX		· · · · · · · · · · · · · · · · · · ·		
OXIDES OF I	NITROGEN				
HYDROCARBON	NS				
CARRION MONE	ox (ot:				
				1	•
CASEGUS FLI	UOPIDES .				
CASEOUS FLE	UOP IDES		,		

Pro	cess Emission Sour	ce Numb	erB-2	37Λ-1.	Page 5	of	8 Editi	Lon
14	IS AN EMISSION MONITORIN							X
	IF YES, DESCRIBE:							
		<u></u>		<u></u>				
15.	ADDITIONAL COMMENTS:							
		····						
		,,,						
	•			EMISSION POI	NT DATA			
16.	SHOW A IR CONTAM INANT DAT	TA FOR THE	S EMISSION F	POINT:			, '	
			·	CONCEN	TRATION	AVERAGE E	MISSIONS	METHOD OF
	POLLUTANT	ADSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	· ·	1			GRAINS/SCF	 		
	PARTICULATES	- 	ļ	<u> </u>	AT 70° F		ļ	
	SULFUR DIOXIDE	+-			PPM		ļ	1.
	OXIDES OF HITROGEN				PPM	\ .	 	
	CARBON MONOXIDE			4/196	PPM	.00017	12.3	Calculation
	GASEOUS FUITHMES	//	ļ		1111	 		
	OTHERS (NAME CHEMICAL)							
	Xylone	<u> </u>		.002	lbs/ft3	.034	286	Calculation
,	Inert Gas	<u> </u>		. 084	lbs/ft ³	1.48	2438	Calculation
			<u> </u>		<u> </u>	<u> </u>	<u> </u>	
				,				
							· · · · · · · · · · · · · · · · · · ·	
				FOR OFFICE	E USE ONLY			
	PROCESS WEIGHT TABLE	APPLIES TO	THIS EMISS	ION POINT.	e			
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH A	PPLICABLE PART	ICULATE REGULATI	ION. ALLOWABL	E EMISSIONS	#/hi
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH S	ULFUR DIOXIDE I	EMISSION STANDAR	RD OF 2000 PPM.		
	EMESSION POINT IS NOT	IN COMPL	IANCE WITH S	ULFUR DIOXIDE I	EMISSION STANDAR	RD OF 500 PPM.		
	EMISSION POINT IS NOT	IN COMPL	IARCE WITH G	ASEOUS EMISSION	N STANDARD. 1DE	ENTIFY GAS		AND ALLOWABLE
	EMISSIONS				•			· · .
	EMASSION POINT IS NOT	IN COMPL	IANCE WITH G	ASEOUS EMISSION	N STANDARD. IDE	ENTIFY GAS		AND ALLOWABLE
	EMISSIONS					,		
<u></u>	CONTINUOUS MONITOR (S			; (2)		; (3)		RECOMMENDED.
	HETHOD OF MEASUREMENT		_					
	T METHOD OF MEASUREMENT	IS NOT A	CCEPTABLE.					
	EXILAIN	_	·	·			<u> </u>	
AL L.C	DWAPLE EMISSIONS (TONS/YE							
	PART (CULATE'S			SULFUR DIOXIDE		, HY	DROCARBONS	·
						EI HUDIUES		
		CARBON MO	NOX TOL		4 150			
TII.	ING IS AUTHORIZED BY				DV	1L		



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Edition	В	

Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
HAIL TO:DIVISION OF AIR POLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE-COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE EASTMAN COMPANY

2.	TANE LOCATION:				LATITUDE			ITUDE	
	B-237A, 1st	floor			36° 31' 24'N	•	82°	32 14W	•
3.	TASK IBENTIFICAT		ME):					· · · · · ·	
	133-52 (Vent	F)		 					
	TANK CAPACITY:		ELS		GALLONS 3600				
5.	TANK DIMENSIONS:	DIAMETER 8 ft.	HL (GHT_						
<i>t</i> .	TA'E SHAPE:	INDRICAL SPIN	-						
7.	TANK MATERIALS O	F CONSTRUCTION:		OD(OTHER(
8.	•	CHAIKING WHITE	TIGHT GREY		ALUMING				
	TANK COMPLETION:	GOOD X		POOR [
ō.	TANK STATUS:			ALTERATION		faaA	cable		
Γ.	TYPL OF TALK:	FIXED ROOF							
	UNDERGROUND ()	FLOATING ROOF	OP	EN TOP [IN	SULATED (X)	OTHERE			
	(CHECK ALL APPLIC	A9US)							
Σ.	IF TANK IS TO HA	VE FLOATING ROOF,	SUPPLY THE	FOLLOWING INFOR	MATION:				
	TYPE OF ROOF:	DOUBLE DEC	к	PONTOON [OTHER	DESCRIB	E		
	TYPE OF SEAL:	SINGL	E 3	DOUBLE []	OTHER	DESCRIB	E	·	,
	TYPE OF SHELL CONSTRUCTION: TIP TANK 18 TO THE	RIVET	POUTTATE	RELIDED CITI	OTHER [DESCRIB	E		
3	TIF TANK ISTO HA	VICTARY TOTHER TYPE	OF ROSE OR	COVER (OR HONE	AT ALL), DESCR	IRE:			
	VENT VALVE DATAE	INDICATE TYPE.	ROMBER. SETT	IEGS AND VAPOR	DISPOSAL:				
•		NUMBER	PRESEURE	VACUON SUTTING	ATMOSPHERE	SCHAPGI LVAPOR	NG TO:	(CHECK)	
	COMBINATION	FSV-TB-251	3" W.C.	1/2 02.		1		1	
	PRESSURE]		}	
	VACUM							j	
	.500%]			
5.	MANUE ATT LIQUIDS	VAPORS, CASES OR	MIXTURES OF S	UCH MATERIALS TO	DE STORED IN T	HIS TAN	K:		
	AVERAGE MOLECULAR DENSITY:	WEIGHT	·	COLPOSITION	(2) 30% Dime 58% Metal	thyl t yl par	teroph ratoju	thalatc ate	:
	DENSITY:	8.5	Lrs/GAL.		10.5% Leth	Ar per	rafore	yl. benz	.oari.c
6.	TERMERATURES AT U	STOR THE ABOVE LIS	TED MATERIALS	ARE TO BE STORE	D IN THIS TANK:				

HINIMUM TEMPLEATURE 290 °F

APC-01

17. SPECIAL VAPOR CONTROLLING TVICE	:s:	Process Emission Co.
CONSERVATION VINT OR RELIEF	P VALVE.	Process Emission Sou Number B-237A-1
CONDENSER,	RE TROM CONDENSER,	Page 8 of 1 Edition B
SCRUBBER.	ON IN OUTLET SCRUBBLE GAS, LBS/FT.	
OTHER THAN ABOVE,		·
18. OPERATIONAL DATA:		
CONTINUOUS FILLING AND DISC AVERAGE DAILY LEVEL FLUCTUA AVERAGE DAILY VOLUME FLUCTU	CHARGING, ATION, 3.5 INCHES (FOR VERTICAL CYLINDRIC DATION,CU. FT. (FOR HORIZONTAL CYLIN	AL TANKS). DRICAL AND SPHERICAL TANKS).
AVERAGE NUMBER OF GALLONG P AVERAGE NUMBER OF FILLS PER	PER FILLING,	
19. OPERATIONAL DATA:	BARRELS PER HOUR (OF)	630 GAL. PER HOUR
AVERAGE OUTAGE: (AVER. D)	ISTANCE FROM TOP OF TANK TO LIQUID SURFACE)	<u>6</u> rr.
AVERAGE THROUGHPUT:	BARRELS PER HOUR (OR)	GAL. PER DAY
FOLLOWING ATTACK FOR EACH	EUM PPCDUCT OR ANY OTHER TYPE OF CREANIC MAT MATURIAL: ATTACH ADDITIONAL SHEETS, IF NE LBS. REID (OR) LBS. PER	CUESSARY
	OF INITIAL BOILING POINT:	
21. IF MATERIAL STORED IS A SOLUTI	ION, SUPPLY THE FOLLOWING INFORMATION:	
	NAME OF MATERIAL DIS	SOLVED:
INFORMATION: IDENTIFY THE MATER	• BY WEIGHT (OR) • BY VER A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRIAL:	
23. ESTIMATED VAPOR LOSS	NATERIAL IS STOPED:LES. PER S TONS/YEAR	Q. IN. GAGE AT
	TIED TO DESCRIBE THE USE OF THE TANK FOR WHI	CH_APFLICATION
SIGNATURE OF RESPONSIBLE NUMBER TYPE ON PRINT NAME AND CITICIAL TITE OF FERSON SIGNING THIS DATA FORM.	OF FIRM: V.C. EDWARN GUZ	PHONE: 246-2111, Ext. 244
DO M	OT WRITE BELOW THIS LINE	
COMMENTS:		· · ·
	REGISTRATION	NO. LILL
	EMISSION POIN	
	UTM ZONE (IF	USED)
	EW COCPD.	
REVIEWER	NE COGPU.	<u> </u>
pATT.		
	A-152 AVERAGE DAILY	C LOSS TO ATMOSPHERE

	Emission B-237A-1	Source
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500

ATTACHMENT I

14.72

No. 20

Material

V.P. © 300°F (PSIA)

Dimethyl terephthalate
Methyl paratoluate
Methyl benzoate

V.P. © 300°F (PSIA)

Boiling Point (°F)

14.72

545

420

388

Methyl paraformyl benzoate



Process	Emiss:	ion Sou	rce
Number	B-237	A-l	
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Edition			

NT I	i. 19:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING			DO NOT COMPANY NO. L PERMIT NO. L PROCESS EMISS	1 1 1 1	l_l_P
						EMISSION POIN	T NO.	
1.	COMPANY NAM	E TEN	NESSEE EASTMAN COM	PANY		REVIEWER L		:
			B-237A-			DATE		•
3.	EMISSION PO	INT NUMBER OR CODE	(AS SHOWN ON PROCESS EMI	SSION SOURCE COVE	R SHEET)	•	G	
4.	INDICATE ST	ACK OR RELEASE POIN	T HEIGHT ABOVE GRADE		5	o		FEET.
5.	SHOW INSTDE	DIAMETER OF STACK	OR RELEASE MECHANISM AT	ТОР	0.	5	**************************************	FEET.
6.	SHOW NORMAL	EXIT GAS TEMPERATUR	RE 239	F. 7. SHOW	EXIT GA	S VELOCITY	.001	FT/SEC.
8.	INDICATE PE	NCENT OF TIME OVER	125°F	100		% .		
•	SHOW EXIT 6	AS VOLUME FLOW RATE	. 0002	21	F	r³ /sec @ 70°F	AND 1 ATMOS.	
			O (GR,/CU, FT,					•
11.	SHOW DISTAN	CE TROM RELEASE POTE	NT TO NEAREST PROPERTY L	INE	390		FEET.	
	•	F GAS STREAM AS IT E ON CONTROL EQUIPMENT	EAVES STACK .	U-UP,	D	D-DOWN,		H-HORIZONTAL
			AIR CONTAMINANT CONTROLLED	YEAR INSTALLED		TYPE 1	EFFIC	CIENCY
	PARTICULATE							
	SULFUR DIOX	IDE						···
	OXIDES OF N	LTROGEN					<u> </u>	
	HYDROC ARBON	5					<u> </u>	
	CARBON MONO	XTOC						
	CASTOUS FLUX	201013					ļ	
	Specifelligelp to 11,000 eliffic specify	• • • • • • • • • • • • • • • • • • • •						
					l_		<u> </u>	

ADDITIONAL COMMENTS:	 						
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the state of the s							
SHOW AIR CONTAMINANT DATA	FOR THE	S EMISSION I	EMISSION POI	NT DATA			
DOWN ATT CONTACTORY DATA	10% 1111	5 EM15510N	1				<u> </u>
POLLUTANT	ABSENT	PRESENT		TRATION	AVERAGE E	MISSIONS	METHOD OF
POCCOTANT.	ADJENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMEN
PARTICULATES				GRAINS/SCF AT 70° F			
SULFUR DIOXIDE				PPM	 		
	-		 	PPM			
OXIDES OF HITROGEN CARRON MONOXIDE			3950	PPM	.0003	2.49	Calculatio
GASEOUS FLUORIDES			7570	PPM	1 .000)	2.49	Calculation
OTHERS (NAME CHEMICAL)						 	
Methyl paratoluate			.008	lbs/ft ³	.0058	49	Calculatio
Methyl benzoate			.009	lbs/ft ³	.0067	56	Calculation
Xylene			.001	lbs/ft ³	.0033	28	Calculatio
Inert Gas			.078	lbs/ft ³	.0592	497	Calculatio
			FOR OFFICE	E USE ONLY			
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PROCESS WEIGHT TABLE AND						F 5001000	
EMISSION POINT IS NOT					•	E EMISSIONS	#
EMISSION POINT IS NOT					•		
I AMESSION POINT IS NOT							AND ALLOWER S
EMISSION POINT IS NOT			BASEOUS EMISSION	N STANDAKO. TU	CAD Y-111M:	·	AND ALLOWABLE
EMISSIONS			C. CEOUR FULCOLO	N 6711/01/00 10/	ENTIEW CAS	• •	AND ALLOWABLE
TON 21 THION HOLESTIM			DASEOUS EM15510	N STANDARD. TU	ENTIFY GAS		AND ALLOWASEE
EMISSIONS			. (2)		. (3)		RECOMMENDED.
CONTINUOUS MONITOR (5)			, (2)		; (3)		- M. COMMENCED.
METHOD OF MEASUREMENT							
METHOR OF MEASUREMENT		•					
EXPLAIN COMMON C							· · · · · · · · · · · · · · · · · · ·
DWARLE EMISSIONS (TONS/YEA	14)			•			
		•	CHI CHO MINVING		LIV	DROCARRONS	
PARTICULATES	· 		SULFUR DIOXIDE			OROCARBONS	
			SULFUR DIOXIDE		FLUORIDES	DROCARBONS	



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Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
MAIL TO:DIVISION OF AIR POLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE FASTMAN COMPANY

2.	TANK LUCATION:	LATITUDE	LONGITUDE
	B-23γΛ, 2nd floor	36° 31 23'N	82° 32' 14'W
3.	TANK IDENTIFICATION (NUMBER OR NAME):	·	•
T -	TD-51 (Vent II)		······································
, <u>-</u>	TASK DIMENSIONS: BARRELS	GALLONS 415	······································
J.	DIAMETER 4 Tt. HEIGHT 4 It.	LENGTHNIDTH	
6.	TALE SHAPE: CYLINDRICAL SPEETCAL OTHER SHA	PE DESCRIBE	
7.	TANK MATERIALS OF CONSTRUCTION:	OTHER SPECIFY	
θ,	TANK PAINT: CHALKING WHITE LIGHT GREY OR BLUE DARK COLOR OR NO PAINT)
<u> 5.</u>	TANK CONDITION:		· · · · · · · · · · · · · · · · · · ·
0.	NEW CONSTRUCTION ALTE	PATION Not App	olicable
1,	TYPE OF TASK: FIXED ROOF TASK: PRESSURE T	INTERNALLY HEATE	D
	UNDERGROUND FLOATING ROOF OPEN TOP _	INSULATED X OTHE	R
Σ,	(CHUCK ALL APPLICABLE) IT TANK IS TO HAVE FLOATING ROOF, SUPPLY THE FOLLOWING	G INFORMATION:	
	TYPE OF ROOF: DOUBLE DECK PONTOON	OTHER DESCR	IBE
	TYPE OF SEAL: SINGLE DOUBLE	OTHER DESCR	IBE
	TYPE OF SHELL CONSTRUCTION: RIVETEDLITIZE WELDED	OTHER DESCR	IBE
j ,	CONSTRUCTION: RIVETED WELDED TO TANK IS TO HAVE ANY OTHER TYPE OF KOCK OR COVER TO	R NOME AT ALM), DESCRIBE:	
١.	VENT VALVE FARAT INDICATE TYPE, FUREEN, SETTINGS 200 NOMBER PERSONAL CASE	UM : DISCHAR	GISG TOE (CHILDE)
	COMPUNATION SUPERING SEPTING		P CONTROL FLARE
	PRESSURE.	,4.	
	VACUM		
	d see:		
5.	NAME ALL LIQUIDS, VAPORS, CASES OR MIXTURES OF SUCH MATER	TALS TO BE STORED IN THIS T	ANK: paraformyl benzoat c .
	AVERAGE MOLECULAR WEIGHT 163 COMPO	sirion (%) 15% Methyl 10% Dimethy	parasoluate 1 terephthalate
~	DESISTAY: 8.5 LES/GAL.		ANS: paraformyl benzoate, paratoluate 1. terephthalate benzeate h-methoxy mathyl ber
6.	TOUBLEAT THIS AT WITCH THE ABOVE LISTED BARERIALS ARE TO F (NORMAL AVERAGE DAILY MINERUM AND MAXIMUM TIMPERATURES)	BE STORED IN THIS TANK:	

MINIMUM TEMPERATURE 320

MAXIMUM TEMPERATURE 330 *F

17.	SPECIAL VAPO	OR CONTROLLING	VICES:						Process	Em i	ssion	Sour
	(X) CONSER	NATION VENT OF	RELIEF VAL	ve.				1	Number	B-23	37∧ - 1	
	CONDENS	SER. E EXIT GAS TEM	PERATURE FR	OM CONDENSE	R,	•F.	•]	Page	13 B	of	18
	SCRUBEL AVERAGE	er, E organic conc	ENTRATION I	OUTLET SO	RUEBER G	AS,	LBS/FT°	•				
	OTHER T	THAN ABOVE,										
18.	OPERATIONAL											
	CONTINU AVERACE	JOUS FILLING A E DAILY LEVEL E DAILY VOLUME	FLUCTUATION		_INCHES CU. FT	(FOR VER	TICAL CYLINDR ORIZONTAL CYL	ICAL TA	NKS). L AND SPH	IERICAI	L TANKS	·).
	AVERAGE AVERAGE	FILLING, E NUMBER OF GA E NUMBER OF FI	LLONS PER F	ILLING,	2 35 350	·						
19.	OPERATIONAL MUMIKAM	PATA: FILLING KATE:			BARFELS		***************************************					'K
		OUTAGE: (A										
	AVERAGE '	THROUGHPUT: _	 		BAKP	ELS PER	HOUR (OR)			JAL. P	ER DAY	•
20.	_ 	STORED IS A			ANY OTH	EE TVDE	00 050000	AGEETAI	CLDDY	V mur		
	FOLLOWING I	NFORMATION FO PACHETERY UNDER	OR EACH MATE	ERIAL: A	PTACH AD	DITIONAL	SHEETS, IF	NECESS/	RY.	111.2		
										OF		
21.		L STORLD 15 %										
	NAME OF SO	LVENT:				NAME O	F MATERIAL D	ISSOLVE	:D:			_
22.	1NFORMATIO	ISSOLVED: -	E MATERIAL							,		
		APOR LOSS			1017.17. 2			1,124 1.	. (7.32. 7	<u> </u>		
7.Y1-1:	THE ABOVE 12 FOR FERMIT 1 SIGNATURE OF OR PRINT HAN	NPORMATION IS IS BEING MADE PESSONSIBLE OF AND CIFICI	SUBMITTED ON THE ACC MEMBER OF AL TITLE	TO DESCRIE OMPANYING FIRM:	J C.	FNW	ขบาร/วน	19	Cin	ne I	27,1	924
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							REGISTRATIC				!	
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ATTACHMENT I

No. 20 <u>Material</u>	V.P. @ 330°F (FSIA)	Boiling Point (°F)
Methyl paraformyl benzoate Methyl paratoluate Methyl benzoate Dimethyl terephthalate Methyl 4-methoxy methyl benzoat	14.74 14.92 15.10 14.73 e 15.10	500 420 388 545 3 95



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2. PROCESS E	DIVISION OF AIR POL C2-212 CORDELL HULL NASHVILLE, TENNESSE NASHVILLE, TENNESSE NAME TENN	EUILDING	-1	COMPANY NO. L PERMIT NO. L PROCESS EMISS EMISSION POIN REVIEWER DATE L	WRITE IN THIS SPACE
		HEIGHT ABOVE GRADE		40	FEET.
•		R RELEASE MECHANISM AT 1		.25	
G. SHOW NORM		E 1.00	***************************************		1,96 FT/SEC.
O. SHOW MOIS	тим, соинат О	.09 GR./CU. FT. C T TO NEAREST PROPERTY LI	DRY GAS AT 70°F) AND	-	(GR./CU. FT. GAS AT CONDITION
	OF GAS STHEAM AS IT LE	EAVES STACK	U-UP,D	D-DOWN,	H-HOR I ZONTAL
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY
PARTICULA	II	yes	1974	001	100%
SULTUR DIG	DX (DE.		······································		
OXIDES OF	NEUPOCEN				
HYDROCAGRO	7111				
CVISION WOL	OX (DE				
GASCOUS FL	9001083				

IF YES, DESCRIPE: CONCENTRATION AVERAGE		(X)				
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EMISSION POINT IS NOT IN COMPLIANCE WITH SULFUR DIOXIDE EMISSION STANDARD OF 2000 PP LMISSION POINT IS NOT IN COMPLIANCE WITH SULFUR DIOXIDE EMISSION STANDARD OF 500 PPN EMISSION POINT IS NOT IN COMPLIANCE WITH GASEOUS EMISSION STANDARD. IDENTIFY GAS EMISSIONS LMISSIONS CONTINUOUS MONITOR (S) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. METHOD OF MEASUREMENT IS NOT ACCEPTABLE. EXPLAIN WABLE EMISSIONS (TOUS/YEAR)		٠,				
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EMISSION POINT IS NOT IN COMPLIANCE WITH GASEOUS EMISSION STANDARD. IDENTIFY GAS EMISSIONS EMISSIONS CONTINUOUS MONITOR (5) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. EXPLAIN WARREL EMISSIONS (TORS/YEAR)						
EMISSIONS IMESSION FOIRT IS NOT IN COMPLIANCE WITH GASEOUS EMISSION STANDARD. IDENTIFY GAS EMISSIONS CONTINUOUS MONITOR (5) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. IMPLAIN WARREL EMISSIONS (TORS/YEAR)	м.					
IMESSION FOIRT IS NOT IN COMPLIANCE WITH GASEOUS EMISSION STANDARD. IDENTIFY GAS EMISSIONS CONTINUOUS MONITOR (5) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. IMETHOD OF MEASUREMENT IS NOT ACCEPTABLE. EXPLAIN WARLE EMISSIONS (TOUS/YEAR)		AND ALLOWAEL				
IMESSION POINT IS NOT IN COMPLIANCE WITH GASEOUS EMISSION STANDARD. IDENTIFY GAS [MISSIONS CONTINUOUS MONITOR (5) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. [METHOD OF MEASUREMENT IS NOT ACCEPTABLE. [METHOD OF MEASUREMENT IS NOT ACCEPTABLE. [METHOD OF MEASUREMENT IS NOT ACCEPTABLE. [METHOD OF MEASUREMENT IS NOT ACCEPTABLE.						
CONTINUOUS MONITOR (S) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. METHOD OF MEASUREMENT IS NOT ACCEPTABLE. EXPLAIN MARKET EMISSIONS (TOUS/YEAR)		AND ALLOWABL				
CONTINUOUS MONITOR (S) FOR (1) ; (2) ; (3) METHOD OF MEASUREMENT IS ACCEPTABLE. METHOD OF MEASUREMENT IS NOT ACCEPTABLE. EXPLAIN MARKET EMISSIONS (TOUS/YEAR)		٠.				
METHOD OF MEASUREMENT IS ACCEPTABLE. INDIAN (TOUS/YEAR)		RECOMMENDED.				
EXPLAIN						
WARE F EMICSIONS (TOUS/YEAR)						
WARE F EMICSIONS (TOUS/YEAR)						
PARTICULATES SULFUR DIOXIDE	•					
	HYDROCARBONS					
CARBON MONOWHOE FLUORIDES						



Process	Emission	Source
Number_	B-237A-1	
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		ENT OF PUBLIC HEALTH	 	DO NOT V	IRITE IN THIS SPACE
WE (17):	C2-212 CORDELL HUL			COMPANY NO.L	1 1 - 1 1 1 1 1 1
	NASHVILLE, TENNESS			PERMIT NO. L	l l l l P
	·			PROCESS EMISS	ON SOURCE NO.
				EMISSION POINT	T NO
1. COMPANY N	IME TEN	NESSEE EASTMAN COMP	A NIV	REVIEWER	
		B-237A-1		DATE	
	•	(AS SHOWN ON PROCESS EMIS		EET) .	K
		IT HEIGHT ABOVE GRADE		100	FFCT
	STACK OR RELEASE POIN	THE TONT ABOVE GRADE		100	FEET.
5. Show this is	DE DIAMETER OF STACK	OR RELEASE MECHANISM AT T	OP	.25	FEET.
G. SHOW NORM	IAL EXIT GAS TEMPERATU	IRE <u>77</u>	F. 7. SHOW EXI	T GAS VELOCITY	25.07 FT/SEC.
8. INDICATE	PERCENT OF TIME OVER	125°F	0	×.	
SHOW EXIT	GAS VOLUME FLOW RATE	1.:	23	FT ³ /SEC @ 70°F	AND 1 ATMOS.
		O (GR./CU. FT. DI			GR./CU. FT. GAS AT CONDITION
_		•			H-HORTZONTAL
3. AIR POLLUT	TION CONTROL EQUIPMEN	Ţ			
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
PARTICULAT	ır				
Sucruis or	oxioc				·
oxides of	NUTROGED				
HADBOCVERO	ONS	·			
CARBON MON	NOX IDE				
GASEOUS IT	LUORIDES				
				i	

ocess Emission Sour			• *			ES NO	X
IF YES, DESCRIBE:							
ADDITIONAL COMMENTS: T	he old i	umber fo	or this vent	was 8-B.		•	
, , , , , , , , , , , , , , , , , , ,						· · · · · · · · · · · · · · · · · · ·	
		· · · · · · · · · · · · · · · · · · ·					
•							
			EMISSION POI	NT DATA			
SHOW A IR CONTAMINANT DA	TA FOR THE	S EMISSION	POINT:			·	
			COUCTU	TD171011	AVEDACE.	- FILLE LONE	METHOD O
POLLUTANT	ABSENT	PRESENT		TRATION		EMISSIONS LBS/YEAR	ME THOU OF
			QUANTITY	UNITS	LBS/HR.	LBS/ TEAR	MEASUREMEI
PART ICULATES				GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	/			PPM			
OXIDES OF BITROOFS	1			PPM			
CARBON MONOXIDE	1			PPM			
GASCOUS FLUDRIDES				PPM			
OTHERS (NAME CHEMICAL)							
Aceta Idehyde		1	.01.2	lbs/ft ³	· 53	464,000	Metered & Aralyzed
Dimethyl ether			.094	lbs/ft3	416	3,657,000	Metered & Analyzed
Methyl acetate		V	.023	lbs/ft ³	1.03	903,000	Mesered & Analyzed
Methanol.		/	.007	J.bs/ft ³	.29	253,000	Analyzed
,			FOR OFFIC	E USE ONLY			. •
PROCESS WEIGHT TABLE	APPLIES TO	THIS EMIS	SION POINT.	,			
EMISSION POINT IS NOT	IN COMPL	TARCE WITH	APPLICABLE PART	ICULATE REGULATI	ON. ALLOWA	BLE EMISSIONS	·
TMISSION POINT IS NOT	IN COMPL	IANCE WITH	SULFUR DIOXIDE	EMISSION STANDAR	D OF 2000 PP	м.	
EMISSION POINT IS NOT	IN COAPL	MARCE WITH	SULFUR DIOXIDE	EMISSION STANDAR	0 OF 500 PPM	•	
EMISSION POINT IS NOT	IN COMPL	IANCE WITH	GASEOUS EMISSIO	N STANDARD. IDE	NTIFY GAS _		_ AND ALLOWARD
EMISSIONS	·				•		
TOB SE THEORY MOLESCHAFT IS NOT	IN COMPL	IANCE WITH	GASTIOUS EMISSIO	N STANDARD. IDE	NTIFY GAS		JEAWOJIJA ONA
EMISSIONS							•
CONTINUOUS MONITOR (3) FOR (1)	; (2)		; (3) _		RECOMMENDED.
METHOD OF MEASUREMEN	r is accep	TABLE.	•				
MÉTHOU OF MEASUREMENT	r is not a	CCEPTABLE.					
EXPLAIN				· · · · · · · · · · · · · · · · · · ·			
TWALE EMPSOIONS (TOUS/YE							
PARTICULATES			SULFUR DIOXIDE			HYDROCARBUNS	
•	CARBON MO	NOXTOE		A-162	FLUORICES		·



Process	Emission Source
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PERMIT APPLICATION - APC 20

			
	TENNESSEE DEPARTMENT OF PUBLIC HEALTH		DO NOT WRITE IN THIS SPACE
MAI TO: DIVISION OF AIR POLLUTION COUTROL			COMPANY NO.
	CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219		AQCR LLL AGENCY CODE LLL
ERMAT	TO BE ISSUED TO:		NEDS COUNTY CODE I
			PERMIT NO. L.
	TENNESSEE FASTMAN CO	MPANY	PROCESS EMISSION SOURCE NO. 1
MAIL ING	ADDRESS		EMISSION POINT NO.
	P. O. Box 511		CITY CODE 1 1 1 UTM ZONE 1
8	Kingsport, Tennessee	37662	EW COORD.
ADDRESS	AT WHICH SOURCE IS TO BE OPERATED:		NS COORD.
•	Same as above.		SIC CODE
	same as above.		REVIEWER LLL
			DATE L. I. I. I. I.
TYPE OF	OPGANIZATION: CORPORATION X		
	· · · · · · · · · · · · · · · · · · ·		DUSTRIAL CLASSIFICATION OF CO. [218, 1, 5]
LATITUDI	E AND LONGITUDE OF AIR CONTAMINANT SOURCE	36° 7	31 22"N 82° 32 14W
·	MODIFICATION \$		
IF THIS OPERATED NAME	AIR CONTAMINANT SOURCE HAS A PREVIOUS WRITE DIES SOURCE AND STATE PREVIOUS TENNESSEE TENNESSEE EASTMAN COMPANY	DIVISION OF AIR	NAME OF CORPORATION, COMPANY OR INDIVIDUAL OWNER THAT POLLUTION CONTROL PERMIT NUMBER, IF KNOWN.
PRESENT	STATUS OF AIR CONTAMINANT SOURCE (CHECK AS	ND COMPLETE APPL	ICARLE ITEMS)
	PERMIT TO CONSTRUCT REQUESTED - Est. Start	ing Date	Est. Completion Date
X	CONSTRUCTION COMPLETED - Date 196	56	PERMIT TO OPERATE REQUESTED
	TRANSFER OF LOCATION - Est. Date		AIR CONTAMINANT SOURCE HAS NOT BEEN ALTERED
ar	5 14 00 De		JUL 2 5 1974
2 16	NATURE OF RESPONDING MEMPER OF FIRM	 	DATE OF APPLICATION
	FRINT NAME AND OFFICIAL TITLE OF	NAME	J. C. Edwards
PERSON:	SIGNING THIS APPLICATION	TITLE	Manager, Clean Environment Program
		PHONE	246-2111, Extension 2444
			-163 APC - 20.



		Emission B-261-1	Source
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PROCESS EMISSION SOURCE COVER SHEET - APC 21

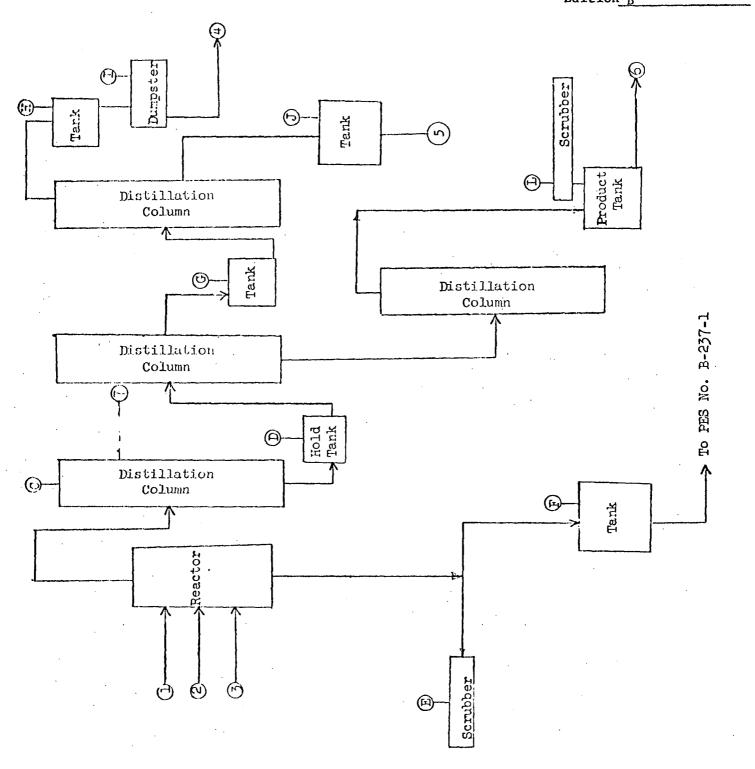
	TENNESSEE DEPARTMENT OF PUBLIC	C HEALTH		DO N	OT WRITE IN THIS	SPACE
WA	DIVISION OF AIR POLLUTION CONT COPPOELL HULL BUILDING C2-212	TROL		COMPANY NO.		444
	NASHVILLE, TENNESSEE 37217			PERMIT NO.		_
				PROCESS EMI	SSION SOURCE NO.	لللا
				EMISSION PO	INT NO. LLL	_
	•			REVIEWER		
				DATE	أ السلسا	
1,	COMPANY NAME TENNESSEE EA			L		
2.	PROCESS EMISSION SOURCE NUMBER B-2				2815	- YES 1.
4.	DID CONSTRUCTION OF THIS PROCESS BEGIN ON OR					
5,	GIVE A BRIEF DESCRIPTION OF THE PROCESS ALONG MATERIAL OUTPUTS AND EMISSION POINTS SHOULD B			•	POINTS, MATERIAL	INPUTS,
	Terephthalic acid and methanol	are reacted to r	roduce di	methyl tere	phthalate.	The
	remainder of the process is dis	stillation to remo	ve impuri	ties.		
	NOTE: ATTACH FLUW DIAGRAM FOR PROCESS EMISSI	ON SOURCE CLAIMED ON SE	PARATE SHEET	• .		
6.	TYPE OF PROCESS: CONTINUOUS X	BATCH [COMBINE	· 🗀	
7.	OPERATIONAL SCHEDULE OF PROCESS EMISSION SOUR	CE:			•	
	A. HOURS PER DAY 24	O.	% ANNUAL TH	RUPUT		_
	B. DAYS PER WEEK 168		DEC-FEB	MARCH-MAY	JUNE-AUGUST	SEPT-NOV
	C. WEEKS PER YEAR 50		25	25	25	25
3.	LIST MATERIAL INPUTS TO PROCESS EMISSION SOURCE	CE:				
			LBS/OPERATING HOUR FLOW DIAGRAM			
	NAME OF INPUT		C4PACITY	LOADING	REFEREN	
	A. Mothunol		4270	4270	1	
	B. Terephthalic Acid		10,800	10,800	2	
	c. xylene		24	24	3_	
	D.		·			
	ε.					
	r,					
	6.					
	TOTAL LESSOPERATING HOUR INPUT TO PROCESS EMI	SSION SOURCE	15,100	15,100	ل	
			(TOTAL ROUS SIGNIFICAN	NOTO TO THREE T FIGURES)		PC 21 EV 5/73
	· ·	۸_164			153	· V - 3/ / 3

3. LIST MAJERIAL DUTPUTS FROM THIS PROCE	SS EMISSION SOURCE:			Number B-261-1 Page 3 of 22 Edition B
		LBS/CPERATING HOUR		FLOW DIAGRAM
NAME OF OUTPUT		CAPACTY	reziyur	REFERENCE
A. Methyl paratolunte		230	230	1,
8. Methyl paraformyl benzeat	e	365	3 65	5
c. Dimethyl terephthalate	<u> </u>	12,500	12,500	6
0. Water		2100	2100	7
ε.				
F.				
6.				
TOTAL LBS/OPERATING HOUR OUTPUT FROM I	PROCESS EMISSION SOURCE	15,200	1.5,200	(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)
10. LIST AIR POLLUTION EMISSION POINTS FOR APC-22, FOR EACH POINT.	SOURCE. ATTACH	A SEPARATE "EN		
EMISSION POINT NO. OR CODE	LBS PARTICULATE/OPERATING HOUR . FL			V DIAGRAM REFERENCE
A. C*,D,F,H,T		0		,D,F,H,I
8. E	.004	.004		
C. I.	C			
D.				
ξ				
Γ.				
TOTAL LBS. OF PARTICULATE EMITTED FROM	M PROCESS EMISSION SOURCE	PER OPERATING	HOUR	.004
NOTE: ATTACH ADDITIONAL SHEETS AS REQUIRE	ED. FOR ITEMS 8, 9, AND 10.			(TOTAL POUNDED TO TWO SIGNIFICANT FIGURES)
*Submitted July, 1970 as Ve	nt 11-B.		-	Stoute took: 57
n. V.C. EDWARGE	1911,7		<u>Dian</u>	1 27,1974
SIGNATURE OF RESPONSABLE	EMEMBER OF FIRM		DATE OF	APPLICATION
12. TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS FORM	NAME	J. C. Edwar	rds	
	TITLE	Manager, C	lean Enviro	nment Program
	DATE	JUN 2 7 1974	! P	PHONE 246-2111, Ext. 2444
	and the state of American State of the State			
The state of the s	FOR OFFICIAL USE	CHLY		The second secon
PROCESS EMISSION SOURCE CLAIMED IS A				
PROCESS EMISSION SOURCE CLAIMED IS N		EDADATE CUEET		
RECOMMENDED MAKE UP OF PROCESS EMISS		•		·
PROCESS EMISSION SOURCE IS NOT IN CO		·		•
DITERISION EQUATION APPLIES TO THIS P			, <u>, , , , , , , , , , , , , , , , , , </u>	
		TABLE	٠	VDFE- 11
LLOWABLE EMISSIONS	L.BS/HOUR	ACTUAL EMISSION	\S	TONE/YEAR

Flow Diagram

For Item 5 of APC-21

Process Emission Source
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Edition B



		Number B-261-1	-ce
	•	Page 4a of 22	
Sup	plement to APC-21 Form	Edition B	
13.	NORMAL OPERATING SCHEDULE: 8400	HOURS PER YEAR.	
14.	DATES OF ANY SCHEDULED ANNUALLY OCCURRING S	SHUTDOWN OF OPERATIONS None	
15.	DATE (YEAR) INSTALLATION (OR PROCESS) WENT	ON LINE 1966	
16.	ESTIMATED PERCENT INCREASE OR DECREASE IN P	PROCESS RATES ON A TOTAL PROCESS	3
	BASIS FOR THE 5 YEARS AFTER THE CALENDAR YE	AR FOR WHICH THIS REPORT IS	
	COMPLETED . O%		



Process	Emission	Source
Number_	B-2611	
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M	TENNESSEE DEPARTI IL TO: DIVISION OF AIR I C2-212 CORDELL H NASHVILLE, TENNES	JLL BUILDING			COMPANY NO. L PERMIT NO. L PROCESS EMISSION POINT	RITE IN THIS SPACE PON SOURCE NO. L.
1.	COMPANY NAME TE	NNESSEE EASTMAN COM	PANY		REVIEWER	
	PROCESS EMISSION SOURCE NUMBE				DATE	
	EMISSION POINT NUMBER OR CODE			ER SHEÉT).	D
4.	INDICATE STACK OR RELEASE POI	NT HEIGHT ABOVE GRADE		37		FEC
5.	SHOW INSIDE DIAMETER OF STACK	OR RELEASE MECHANISM AT	ГОР	.25		FECT
6.	SHOW NORMAL EXIT GAS TEMPERAT	URE 185	°F. 7. SHO	W EXIT G	AS VELOCITY	.108 FT/S
8.	INDICATE PERCENT OF TIME OVER	125°F	100		%.	
	SHOW EXIT GAS VOLUME FLOW RAT	E .0053	tas, adolf i er wildskappalitus i littled di Stormanne Timb		FT ³ /SEC @ 70°F /	AND 1 ATMOS.
10.	SHOW MOISTURE CONTENT	O (GR./CU. FT. I	DRY GAS AT 70°F)	AND	0	GR./CU. FT. GAS AT CONDI
11.	SHOW DISTANCE FROM RELEASE PO	INT TO NEAREST PROPERTY L	INE	610		FEET.
12,	DIRECTION OF GAS STREAM AS IT	LEAVES STACK	U-UP,	D	D-DOWN,	H-HOR I ZONTAL
13.	AIR POLLUTION CONTROL EQUIPME	NT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED		TYPE 1	EFFICIENCY
	PARTICULATE				·	
	SULFUR DIOXIDE					
	OXIDES OF NITROGEN				·	
	HYDROCARBONS					<u> </u>
	CARBON MONOXIDE					
	CASFOUS FLUORIDES					
•	**************************************					
	•					

cess Emission Sour	ce Numb	B-26	1-1	Page 6	of	22 Edit	ton B
IS AN EMISSION MONITOR	NG AND REC	UNG INSTR	MENT ATTACHE	D TO THIS EMISSIO	ν , ιΝΤ? Υ Ε	NO NO	X
IF YES, DESCRIBE:				·			
			····				
ADDITIONAL COMMENTS:							
				·			
			EMISSION PO	INT DATA			
SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION P		int vain			
					T	·	-
			CONCE	NTRATION	AVERAGE	EMISSIONS	METHOD (
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREM
DADTICULATES	/			GRAINS/SCF AT 70° F			
PARTICULATES	+>			PPM	 	 	-
SULFUR DIOXIDE	17			PPM	 		
OXIDES OF NITROGEN CARBON MONOXIDE	† <u> </u>		2956	PFM	.007	57	Calculati
GASEOUS FLUORIDES	1/			PPM		 	Carsaino
OTHERS (HAME CHEMICAL)						1	
Xylene			.002	lbs/ft.3	0.44	7875	Calculati
Indrt Gas			.071	lbs/ft3	1.36	13,410	Calculati
					<u>, </u>		
		·					
			FOR OFFI	CE USE ONLY			
PROCESS WEIGHT TABLE	ADDLIES TO	THIS FRISS	TON DOINT				
EMISSION POINT IS NO	•			FICULATE DEGULATI	ION ALLOWARI	E ENISSIONS	
EMISSION POINT IS NO	•			•		-	
TEMISSION POINT IS NO						•	•
EMISSION POINT IS NO					· · · ·		AND ALLOWAE
EMISSIONS			ADEOUG ENTOGY	on Othioping, The			. AND ALLOWAL
BMISSION POINT IS NO			ASEOUS EMISSIO	ON STANDARD. IDE	NTIFY GAS		AND ALLOWAR
EMISSIONS	_	=:					
CONTINUOUS MONITOR (S			; (2)	· I	: (3)		RECOMMENDED.
METHOD OF MEASUREMENT							
THETHOO OF MEASUREMENT							
J 1.511100 01 11541001151111							
₹						•	
EXPLAIN TOUS/YE	٠.		·				

DATE

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| PROCESS EMISSION SOURCE NO. L.L. EMISSION POINT NO. L.L. REVIEWER L.L. DATE L.L. TENNESSEE EASTMAN COMPANY PROCESS EMISSION SOURCE NO. L.L. REVIEWER L.L. DATE L.L. DATE L.L. TENNESSEE EASTMAN COMPANY DATE L.L. TENNESSEE EASTMAN COMPANY DATE L.L. DATE L.L. TENNESSEE EASTMAN COMPANY DATE L.L. TENSESSEE EASTMAN COMPANY DATE L.L. TENNESSEE EASTMAN COMPANY |
|--|----------------------|
| 4. INDICATE STACK OR RELEASE POINT HEIGHT ABOVE GRADE 5 5. SHOW INSIDE DIAMETER OF STACK OR RELEASE MECHANISM AT TOP 1 | P
L |
| 5. SHOW INSIDE DIAMETER OF STACK OR RELEASE MECHANISM AT TOP 1 | |
| 5. SHOW INSIDE DIAMETER OF STACK OR RELEASE MECHANISM AT TOP 1 6. SHOW NORMAL EXIT GAS TEMPERATURE 100 °F. 7. SHOW EXIT GAS VELOCITY 42 | FEET, |
| 5. SHOW NORMAL EXIT GAS TEMPERATURE 100 °F. 7. SHOW EXIT GAS VELOCITY 42 | FEET. |
| | FT/SEC |
| B. INDICATE PERCENT OF TIME OVER 125°F | |
| 9. SHOW EXIT GAS VOLUME FLOW RATE 33 FT 3 /SEC @ 70°F AND 1 ATMOS. | |
| O. SHOW MOISTURE CONTENT O (GR./CU. FT. DRY GAS AT 70°F) AND O (GR./CU. FT. GAS A | STACK
T CONDITION |
| 1. SHOW DISTANCE FROM RELEASE POINT TO NEAREST PROPERTY LINE 630 FEET. | |
| 2. DIRECTION OF GAS STREAM AS IT LEAVES STACK U U-UP, D-DOWN, H-HORI | ZOUTAL |
| AIR POLLUTION CONTROL EQUIPMENT | · |
| AIR CONTAMINANT YEAR CONTROLLED INSTALLED TYPE T EFFICIENCY | |
| PARTICULATE yes 1969 001 99% | |
| SILFUR DIOXIDE | |
| OXIDES OF NITINGEN | |
| HYDROCARBONS | |
| CARBON MONOXIDE | |
| CASSOUS FLUORIDES | |
| | |
| | |

cess Emission Sour				-		NO NO	X
IF YES, DESCRIBE:				TO THIS EMISSION	011 101. 123	ا ا	لما
ADDITIONAL COMMENTS:							
ADDITIONAL COMMENTO.				-,			
(<u>m. 1974) - 1974 - 197</u>				····			
							
•			EMISSION POI	NT DATA			
SHOW AIR CONTAMINANT DA	ATA FOR THI	S EMISSION P	OINT:				
		·	CONCEN	TRATION	AVERAGE E	MISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UILITS	LBS/HR.	LBS/YEAR	MEASUREMEN
				GRAINS/SCF	-		
PART ICULATES			.0002	AT 70° F	.004	37	Calculation
SULFUR DIOXIDE				PPM	<u> </u>	<u></u>	
OXIDES OF NITROGEN	1			PPM	ļ	<u></u>	
CARBON MONOX IDE				PPM	ļ	ļ	_
GASEOUS FLUOPIDES				PPM	ļ		
OTHERS (NAME CHEMICAL)							
***************************************						<u> </u>	
•		<u> </u>				·	
				·			
Anne de la companya de la Contra del Contra de la Contra del la Contra del la Contra del la Contra del la Contra del la Contra de la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra del la Contra de							
	•		FOR OFFIC	E USE ONLY			
PROCESS WEIGHT TABLE	APPLIES T	O THIS EMISS	ION POINT.				
EMISSION POINT IS NO	T IN COMPL	LANCE WITH A	PEICABLE PART	ICULATE REGULAT	ION. ALLOWABL	E EMISSIONS	#
EMISSION POINT IS 110						-	
EMISSION POINT IS NO	T IN COMPL	TANCE WITH SE	JLTUR DIOXIDE	EMISSION STANDA	RD OF 500 PPM.		
EMISSION POINT IS NO	T IN COMPL	IANCE WITH GA	ASEOUS EMISSIO	N STANDARD. IDE	ENTIFY GAS		AND ALLOWABLE
							
DAISSION POINT IS NO			ASEOUS EMISSIO	N STANDARD. 1DE	ENTIFY GAS		AND ALLOWABLE
							 .
EMISSIONS	······································		; (2)		: (3)		RECOMMENDED.
CONTINUOUS MONITOR (S) FOR (1)						-
EMISSIONS CONTINUOUS MONITOR (METHOD OF MEASUREMEN				•			
CONTINUOUS MONITOR (T IS ACCEPT	TABLE.					
CONTINUOUS MONITOR (METHOD OF MEASUREMEN	T IS ACCEPT	TABLE.					
CONTINUOUS MONITOR (METHOD OF MEASUREMEN METHOD OF MEASUREMEN	T IS ACCEPT	TABLE.					
CONTINUOUS MONITOR (METHOD OF MEASUREMEN METHOD OF MEASUREMEN EXPLAIN WABLE EMISSIONS (TONS/YE	T IS ACCEPT T IS NOT AC	TABLE.	I.FUR DIOXIDE		HY	DROCARBONS	
CONTINUOUS MONITOR (METHOD OF MEASUREMEN EXPLAIN MARLE EMISSIONS (TONS/YE PARTICULATES	T IS ACCEPT T IS NOT AC	TABLE. CCEPTABLE. SU	I.FUR DIOXIDE		HY	DROCARBONS	

Process	Em	ission	Source
Number_		B-261-	L
Page	8a.	of_	22
Edition		B	

Supplement to APC-22

17.	AIR POLLUTION CONTRO	OL EQUIPMENT	18.AIR CONTAMINANT DATA FOR EMISSION POINT
	POLLUTANT REMOVED	PERCENT DESIGN EFFICIENCY	MAXIMUM EMISSION RATE, LBS. PER HOUR
	PARTICULATE	99.0	.004
	SULPUR DIOXIDE		
	OXIDES OF NITROGEN		
	HYDROCARBONS		
	CARBON MONOXIDE		
	GASEOUS FLUORIDES		

19.	AIR POLLUTION CONTRO	OL EQUIPMENT COND	
	INLET GAS TEMPERATURE	e, °F 120	· · · · · · · · · · · · · · · · · · ·
	INLET GAS FLOW RATE,	CFM 2160	
	EXIT GAS PRESSURE, PS	SI11	· · · · · · · · · · · · · · · · · · ·
20.	EXIT GAS FLOW RATE F	FROM STACK AT ACT	UAL FLOW CONDITION, MAXIMUM CFM 2090



Process	Emission	Source
Number	B-261-1	
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Edition		

MAIN	L TO:	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL MUL NASHVILLE, TENNESS	L BUILDING		COMPANY NO. L	IRITE IN THIS SPACE
	COMPANY NAM	22717	NESSEE EASTMAN CON B-261-1	Pany 	j	NO
5. 6. 8.	INDICATE ST SHOW THIS THE SHOW NORMAL INDICATE PE SHOW EXIT G	TACK OR RELEASE POINT DIAMETER OF STACK OF EXIT GAS TEMPERATURE RECENT OF TIME OVER THE OV	æ <u>176</u> 125°F	TOP°F. 7. SHOW EX10000044	35 0.17 (IT GAS VELOCITY%	FEETFEETFT/SEC
2.	DIRECTION O	F GAS STREAM AS 1T L				FEET. H-HOR1ZONTAL
13.	ATR POLLUT	ON CONTROL EQUIPMENT	AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFF I C I ENCY
9	PARTICULATE		·			
9	SULFUR DIOX	10E				
9	OXIDES OF N	ITROGEN				
<u> </u>	TYDROC ARRON	S				
9	ARBON MONO	XIVE				·
2	DASEOUS FLUC	DRIDES				

cess Emission Source						٠	on <u>B</u>
IS AN EMISSION MONITORIN					UN FUINTY YES	NO [ــــــــــــــــــــــــــــــــــــــ
IF YES, DESCRIBE:			· <u>, , , , , , , , , , , , , , , , , , ,</u>			, <u>, , , , , , , , , , , , , , , , , , </u>	
		· · · · · · · · · · · · · · · · · · ·	···	<u> </u>			
ADDITIONAL COMMENTS:	. 						<u> </u>
							<u></u>
			EMISSION PO	INT DATA			
SHOW AIR CONTAMINANT DAT	A FOR THI	S EMISSION P					
	T				<u></u>	·	1
*********		2055517	CONCE	NTRATION	AVERAGE E	MISSIONS	METHOD
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASURE
PART ICULATES	/			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	17			PPM PPM			
	1			PPM	 		
OXIDES OF NITROGEN CARBON MONOXIDE	1			РРМ	 		
GASEOUS FLUORIDES	1			PPM	 	 	
OTHERS (NAME CHENICAL)	 			1			
Xylene	 		.038	lbs/ft ³	.06	523	Calculat
Nitrogen -	1		.076	lbs/ft ³	.12	989	Calculat
-A12-VA-VI-VI-VI-VI-VI-VI-VI-VI-VI-VI-VI-VI-VI-	1		• • • • •	200/10	1	1 209	1011-011-11
		·	· · · · · · · · · · · · · · · · · · ·		<u></u>	<u> </u>	
					·		
			FOR OFFIC	E USE ONLY			
1 mooree tricum with m	1001 (50 =	N WILLS ELLISS					
PROCESS WEIGHT TABLE A			•		ION 41.5	E FUICOLOUS	
EMISSION POINT IS NOT							
EMISSION POINT IS NOT					•		
EMISSION POINT IS NOT							4410-44-4
EMISSION POINT IS NOT			195009 FW19210	M STANDARD. IDE	INTIFY GAS	····	_ AND ALLOWA
•	. IN COMOL I		יברחום האירחים	AL CTANDADO	HITLEN CAS	•	
EMISSION POINT IS NOT			13510 EM15510	N STANDARD. IDE	INTIFY GAS		_ AND ALLOWA
EMISSIONS CONTINUES MONITOR (S)					. 171		DE COMMENT
CONTINUOUS MONITOR (S) METHOD OF MEASUREMENT			; (2)		; (3)		MECUMMENDED.
METHOD OF MEASUREMENT		•		•			
EXPLAIN						•	·
ABLE EMISSIONS (TONS/YEA							

DATE



Process	Emission	Source
Number_	B-261-1	
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Edition	В	

Storege Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
MAIL TO:DIVISION OF AIR POLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE EASTMAN COMPANY

7.	TANK LOCATION:				1.A	TITUDE	LON	GITUDE
	B-261, 1st	floor		······································	36	31 21N	82	32 14W
3.	TANK IDENTIFICAT		OR NAME):				•	
4.	DB-52 (Ven	it G)						
5.	TANK DIMENSIONS	 	BARRELS		GALLO:	is 3600		·
		DIAMETER 8	ft. HEIGHT.	8 ft. LENGTH		width	· · · · · · · · · · · · · · · · · · ·	
6.	TALE SHAPE: CYI	LINDRICAL	SPERICAL	OTHER SHAPE	DESCH	IBF		
7.	TANK MATERIALS C	or constr ucti c		OOD OTHER		SPECIFY		
8.	TANK PAINT:		E LIGHT GRE			ALUMINUM	X_1	
9.	TANK CONDITION:	GOOD X		POOR				
0.	TANK STATUS:			☐ ALTERATION		Not.	Applicab	l e
1.	TYPL OF TANK:	FIXED ROOF [RESSURE [ERNALLY HE		
				-				
	UNDERGROUND		00F [C	PER TOP IT	ASO I W.E	.0 <u>[_A_]</u> 0	THE.KL	
2.	CHECK ALL APPLIC IF TANK IS TO HA	AME FLOATING R	OOF, SUPPLY THE	FOLLOWING INFO	OITAM	:		
	TYPE OF ROOF:	DOUBLE	DECK	РОМТООМ	OTHER	DE:	SCRIBE	
	TYPE OF SEAL:	s	INGLE	DOUBLE	OTHER	DE:	SCRIBE	
	TYPE OF SHELL CONSTRUCTION:	R	IVETED	WELDED [OTHER	DE:	SCRIBE	
3.	CONSTRUCTION: IF TANK IS TO HA	VE ANY OTHER	TYPE OF ROOF OR	COVER (OR NONE	AT ALI), DESCRIB	E:	
,	P. (1970)		ru —					
٧.	VENT VALVE DATA:	NUMBER	PRESSURE	VACCUM	1	F-1SCI	HARGING TO:	
	COMBINATION	PSV-DB-0	54 SETTING	1/2 oz.	TΛ	MOSPHERE VA	APOR CONTROL	FLARE
	PRESSURE	L	nt used for					1
	VACUM							1
						j		1
5	NAME ALL LIQUIDS,	VAPORS, GASES	OR MIXTURES OF	SUCH MATERIALS TO	BE STO	ORED IN THIS	TANK:	<u> </u>
	AVERAGE MOLECULAR			COMPOSITION				hthalate nate e <u>nyl benzoat</u>
	DENSITY:	8,5	LBS/GAL.		18.	5% Hethy	l benzeat	e nvl benzest
	TIMPERATURES AT W			S ARE TO BE STOKE	D IN TI	IIS TANK:	post 01 01	Sollated

MINIMUM TEMPERATURE 290 °F

MAXIMIM TEMPERATURE 310 °F

17. SPECIAL VAPOR CONTROLLING ICES:		
CONSERVATION VENT OR RELIEF VALVE.		Process Emission Sou Number B-261-1
CONDENSER, AVERAGE EXIT GAS TEMPERATURE FROM CONDENSER, *F	•	Page 12 of 22 Edition B
SCRUBBER, AVERAGE ORGANIC CONCENTRATION IN OUTLET SCRUBBER GAS,	LBS/FT°.	
OTHER THAN ABOVE, EXPLAIN		·
18. OPERATIONAL DATA:		
CONTINUOUS FILLING AND DISCHARGING, AVERAGE DAILY LEVEL FLUCTUATION, 3.5 INCHES (FOR VE AVERAGE DAILY VOLUME FLUCTUATION, CU. FT. (FOR	RTICAL CYLINDRICAL HORIZONTAL CYLINDRI	TANKS). CAL AND SPHERICAL TANKS).
AVERAGE NUMBER OF GALLONS PER FILLING, AVERAGE NUMBER OF FILLS PER YEAR,	·	4
19. OPERATIONAL DATA: MAXIMUM FILLING RATE: BARRELS PER HO	SUR (OR) 320	O GAL. PER HOUR
AVERAGE OUTAGE: (AVER. DISTANCE FROM TOP OF TANK TO I		
AVERAGE THROUGHPUT:BARRELS PER	HOUR (OK)	GAL. FER DAY
TANK TURNOVEFS PER YEAR:		
20. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE FOLLOWING LIEOENATION FOR EACH MATERIAL: ATTACH ADDITIONS OF ATTACH ADDITIONS	OF ORGANIC MATERI L SHEETS, IF NECES	AL, SUPPLY THE SSARY.
VAPOR PRESSURE: LBS. REID (OR)	LBS. PEP SC.	IK.
APSOLUTE AT OF INITIAL BO	PILING POINT:	o _F
21. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INF		
NAME OF SOLVENT: NAME	OF MATERIAL DISSOL	VED:
CONCENTRATION OF MATERIAL DISSOLVED: & BY WEIGHT (OP)	BY VOL	ME (OR)ERS/GALLON
22. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NO INFORMATION:	T A PETROLEUM PPOL	FUCT, SUPPLY THE FOLLOWING
IDENTIFY THE MATERIAL:	- 	
PRESSUPE AT WHICH MATERIAL IS STOPED:	LBS. PER SQ.	IN. GAGE ATOF
23. ESTIMATED VAPOR LOSS .055 TONS/YEAR		
THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF T FOR FERMIT IS DEING MADE ON THE ACCOMPANYING FORM	HE TANK FOR WHICH	APPLICATION
SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: J.C. FDWA	RIS CHI	Sec 27, 19:
OF FERSON SIGNING THIS DATA FORM. NAME: J. C. Edwa	rds F PHO	ONE: 246-2111, Ext. 2
TITLE. Manager, C	lean Environmen	t Program
DO NOT WRITE BELOW THIS LINE	· · · · · · · · · · · · · · · · · · ·	
COMMENTS:	DO NOT WRI	TE IN THIS SPACE
	AIR QUALITY REGI	ON LIL
	AGENCY CODE -	11
	PERMIT NO.	
	REGISTRATION NO.	
	PROCESS EMISSION	SOUPCE NO.
	EMISSION POINT NO	اللا-للل
	UTM ZONE (IF USE	0) []
	EW COCPD.	
REVIEWER	NS COORD.	
DATE	SIC COPE	
		· ;
		•

Process	Emission	Source
Number	B-261-1	

ATTACHMENT I

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No. 20	Material	v.p. @ 300°F (PSIA)	Boiling Point (°F)
Meth Meth	thyl terephthalate yl paratoluate yl benzoate yl paraformyl benzoate	14.72 14.82 14.96 14.72	545 420 388 500



Process Number	Emission B-261-1	Source
Page 1		22
Edition	R	

MAIL TO: DIV	INESSEE DEPARTMENT OF VISION OF AIR POLLUTION 212 CORDELL HULL BUILD HVILLE, TENNESSEE 3	ON CONTROL		DO NOT W	WRITE IN THIS SPACE
		7213		PERMIT NO. L_	1 -
				ì	ION SOURCE NO.
				1	T NO.
1. COMPANY NAME	TENNESSI	EE EASTMAN COM	PANY-	REVIEWER	
	N SCURCE NUMBER			DATE	
			ISSION SOURCE COVER SHEE	T).	Н
4. INDICATE STACK (OR RELEASE POINT HETO	SHT ABOVE GRADE		12	FE
5. SHOW INSIDE DIAM	ÆTER OF STACK OR REL	EASE MECHANISM AT	ТОР		
6. SHOW NORMAL EXT	T GAS TEMPERATURE	239	F. 7. SHOW EXIT	GAS VELOCITY	.0053 FT/SE
8. INDICATE PERCENT	T OF TIME OVER 125°F		100	x.	·
SHOW EXIT GAS VO	DLUME FLOW RATE	.00	10	. FT ³ /SEC @ 70°F	AND 1 ATMOS.
10. SHOW MOISTURE CO	O THETH	(GR./CU. FT.	DRY GAS AT 70°F) AND	0	[GR./CU. FT. GAS AT COND
			LINE 520		
12. DIRECTION OF GAS	STREAM AS IT LEAVES	STACK	U-UP,D	D-DOWN,	H-HOR I ZONTAL
13. AIR POLLUTION CO	NTROL EQUIPMENT			·	
		IR CONTAMINANT CONTROLLED	YEAR Installed	TYPE 1	EFFICIENCY
PARTICULATE					
SULFUR DIOXIDE					
OXIDES OF NITROG	EN				
HYDROCARBONS					
CARBON MONOXIDE				-	
CASEOUS FLUORIDE	<u>s</u>				
-				<u></u>	

cess Emission Sourc	e Numb	er <u> </u>	51-1	Page15_	of22	Editi	tonB
IS AN EMISSION MONITORING			•				X
IF YES, DESCRIBE:						·	
ADDITIONAL COMMENTS:							
					······································	· · · · · · · · · · · · · · · · · · ·	
		- 			<u> </u>		
			EMISSION POI	NT DATA			
SHOW AIR CONTAMINANT DATA	FOR THE	S EMISSION I	POINT:				,
POLLUTANT	ABSENT	PRESENT		TRATION	AVERAGE E		METHOD O
		<u> </u>	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUPEME
PARTICULATES	/	ł		GRAINS/SCF			
SULFUR DIOXIDE	1		 	PPM			
OXIDES OF NITROGEN	/			FPM			
CARBON MONOXIDE			3958	PPM-	.0015	12.5	Calculation
GASEDUS FLUDRIDES	1			PPM			
OTHERS (NAME CHEMICAL)							
Methyl paratoluate			.008	lbs/ft ³	.029	242	Calculation
Methyl benzoate			.009	1bs/ft ³	.033	280	Calculation
Xylone			.005	lbs/ft ³	.017	144	Calculation
Inert Gas	L		.083	lbs/ft ³	.30	2480	Calculation
				•	·		•
			FOR OFFIC	E USE ONLY			
	•			- 001 01121			•
PROCESS WEIGHT TABLE A			•				
EMISSION POINT IS NOT						E EMISSIONS	
EMISSION POINT IS NOT							
EMISSION POINT IS NOT					•		
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD. 1DE	ENTIFY GAS		AND ALLOWARL
EMISSIONS							
EMISSION POINT IS NOT			GASEOUS EMISSIO	N STANDARD, IDE	ENTIFY GAS		AND ALLOWABLE
EMISSIONS							
CONTINUOUS MONITOR (S)			; (2)		; (3)		RECOMMENDED.
METHOD OF MEASUREMENT		-					
METHOD OF MEASUREMENT		•					
EXPLAIN							
DWARLE EMISSIONS (TONS/YEAR	•						
PARTICULATES		s	ULFUR DIOXIDE		HY	DROCARBONS	
CA	RBON MON	OXTOE		4	FLUORIDES		
NG IS AUTHORIZED BY				- Λ-179 DAT			



		Imission B-261-1	Source
Page		of	22
Editi	on I	3	

					DO NOT WA	RITE IN THIS SPACE
MV I	L TO:	TENNESSEE DEPARTMEN DIVISION OF AIR POL			1	·
PO MAJ	L 17;	C2-212 CORDELL HULL	•		COMPANY NO.LL	T T T T T T T T T T T T T T T T T T T
		NASHVILLE, TENNESSE	37213		PERMIT NO. L	lll P
ŕ					PROCESS EMISSIC	N SOURCE NO.
					EMISSION POINT	NO. [
,	COMMANY N	ALAP MOVES TO THE	2222 212224	T	REVIEWER	
			ESSEE EASTMAN COM	PANY	DATE L L L	
		MISSION SOURCE NUMBER			<u> </u>	
3,	EMISSION I	POINT NUMBER OR CODE (AS SHOWN ON PROCESS EMI	SSION SOURCE COVER SE	KET).	I
4.	INDICATE S	STACK OR RELEASE POINT	HEIGHT ABOVE GRADE		10	FE
5.	SHOW INSTE	DE DIAMETER OF STACK OF	RELEASE MECHANISM AT	TOP	. 167	FECT
		•				
6.	SHOW NORMA	AL EXIT GAS TEMPERATURE	175	F. 7. SHOW EX	IT GAS VELOCITY	.066 FT/S
В,	INDICATE	PERCENT OF TIME OVER 12	25 [°] F	100	% ,	•
~•	SHOW EXIT	GAS VOLUME FLOW RATE	.003	14	FT ³ /SEC @ 70°F A	ND 1 ATMOS.
0.	SHOW MOIST	TURE CONTENT C	(GR./CU. FT.	DRY GAS AT 70°F) AND	0	_(GR./CU. FT. GAS AT CONDI
1.	SHOW DISTA	NCE FROM RELEASE POINT	TO NEAREST PROPERTY L	INE5	25	FEET.
2.	DIRECTION	OF GAS STREAM AS IT LE	AVES STACK	U-UP,	D D-DOWN,	H-HORIZONTAL
3.	AIR POLLUT	TON CONTROL EQUIPMENT				
			AIR CONTAMINANT CONTROLLED	YEAR Installed	TYPE 1	EFF IC IENCY
•	PART I CULAT	E				
,	SULFUR DIO	XIDE				
•	OXIDES OF	NITROGEN				
•	HYDROC ARBO					
	CARBON MON	OXTDE				
	GASEOUS FLE	UORIDES				
•						

Pro	cess Emission Sourc							
14	IS AN EMISSION MONITORING					N INT? YES	L NO	X
	IF YES, DESCRIBE:			O.	· · · · · · · · · · · · · · · · · · ·			
15,	ADDITIONAL COMMENTS:							
16.	SHOW AIR CONTAMINANT DATA	FOR THI	S EMISSION I	EMISSION POI	INT DATA			
,				1	ITRAT ION	AVERAGE E	MISSIONS	METHOD OF
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
	PART ICULATES	/			GRAINS/SCF AT 70° F			
	SULFUR DIOXIDE				PPM		·	
	OXIDES OF NITROGEN	/			PPM	·		
	CARBON MONOX IDE			4060	РРМ	.002	17.9	Calculation
	GASEOUS FLUORIDES	/			PPM			
	OTHERS (HAME CHEMICAL)							
	Methyl Paratoluate		/	.008	lbs/ft3	.041	340	Calculation
	Methyl Benzoate		/	.009	lbs/ft ³	.046	392	Calculatic:
	Xylene		V	.005	lbs/ft3	.024	200	Calculation
	Inert Gas			.083	lbs/ft3	.42	3478	Calculation
				FOR OFFIC	E USE ONLY			
	PROCESS WEIGHT TABLE AN	POLIES TO	THIS FMISS	CION POINT				
	EMISSION POINT IS NOT		•	·	ICH ATE DECHI AT I	ON ALLOWARI	E ENISSIONS	μ/ι.
	EMISSION POINT IS NOT		•				E EM13310113	
_	EMISSION POINT IS NOT					•		
	EMISSION POINT IS NOT						•	AND ALLOWABLE
	EMISSIONS						·	
	CHISSION POINT IS NOT			ASEOUS EMISSIO	N STANDARD. IDE	NTIFY GAS		AND ALLOWABLE
	EMISSIONS						T	
	CONTINUOUS MONITOR (S)			; (2)		; (3)	•	RECOMMENDED.
	METHOD OF MEASUREMENT I							-
	METHOD OF MEASUREMENT I	S NOT AC	CEPTABLE.					·
	EXPLAIN							
ALLO	WABLE EMISSIONS (TONS/YEAR	_	. —					
	PARTICULATES		s	ULFUR DIOXIDE		HYI	PROCARBONS	
	CA	RBON MOD	OXIDE					

DATE



Process	Emi	ssion	Source	3
Number	B-2	61-1	1	
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Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
MAIL TO:DIVISION OF AIR FOLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE EASTMAN COMPANY

2.	TANK LUCATION:			LATITUDE	LONGITUDE
	B-261, 1st fl	oor Di (NUMBER OR NAME):		36° 31 21N	82° 32° 1471
3.	TANK IDENTIFICATION	M (MUMBER OR NAME):			
	DD-51 (Vent	J)			
4.	TANK CAPACITY:	BARRELS		CALLOUS 415	
5.	TANK DIMENSIONS:				
6.	TALL CHAOK.				
7.	TANK MATERIALS OF	DEICAL[X] E PHERICAL[CONSTRUCTION: STEELC	WOODL OTHER	J DESCRIBE	
ē.	TANK PAINT:	MALKING WHITE LIGH	IT GREY OR BLUE	ALUMINUM X	
ÿ .	TANK CONDITION:	GOUD [X] FA		<u></u>	
0.	TANK STATUS:			Not Ap	nlicable
1.	TYPE OF TANK:	TIXED ROOF X			
	UNDERGROUND	FLOATING ROOF	OPEN TOP	INSULATED X OTH	ER CONTRACTOR
	CHECK ALL APPLICAP	(LE)			
2.	IF TANK IS TO HAVE	FLOATING ROOF, SUPPL	Y THE FOLLOWING INFO	DRMATION:	
	TYPE OF ROOF:	DOUBLE DECK	псотиоч С	OTHER DESCRI	RIBE
	TYPE OF SEAL:	SINGLE	DOUBLE	OTHER DESCRI	RIBE
	TYPE OF SHELL CONSTRUCTION:	RIVETFD	WELDED (OTHER TITLE DESC	RIBE
J. ~	IF TANK IS TO HAVE	ANY OTHER TYPE OF EO	OF OR COVER OR HOM	E AT ALL), DESCRIBE:	RIBE
د .	VENT VALVE DATA:	INDICATE TYPE, NUMBER	CERTIFICE STO GENOR	2 2 2 0 0 C 3 Y	
••	valiti (Mi) to billipi	NUMBER FALS	SURE T VACUUM	SISCHA	GING TO: (CHECK)
	COMBINATION	PSV-DB-054 6" I	$\frac{\text{TING}}{1.\text{C.}}$ $\frac{\text{SETTING}}{1/2 \text{ oz.}}$	ATMOSPHERE VAPO	OR CONTROL FLARE
	PRESSURE	(Same vent used			
	VACUM				
	PRIN			·	·
	NAME ALL LIQUIDS, VA	PORS, GASES OR MIXTURE	S OF SUCH PATERIALS 7	Q BE STORED IN THIS T	ANK:
	AVERAGE MOLECULAR W	ет с нт <u>163</u>	COMPOSITION	70 Methyl 1 155 Fethyl 1 255 Fethyl 1	ANK: caraformyl benzoate baratoluate benzoate terephthalate
	DENSITY:	8,5LBS/GAL	•	2.5% Fethyl	L terephthalate
5.		H THE ABOVE LISTED MAT N MINIMUM AND KANIMUM			*

A-182 MAXIMUM TEMPERATURE 330 °F

MINIMUM, TEMPERATURE 320

	CIAL VAPOR CONTROLLING VICES:			Process Emissic Number B-261-1	
ĽÝ.	CONSERVATION VENT OR RELIEF VALVE.			Page 19 of	
\Box	CONDENSER. AVERAGE EXIT GAS TEMPERATURE FROM CONDENSER	•F.	•	Edition B	
\Box	SCRUBBER, AVERAGE ORGANIC CONCENTRATION IN OUTLET SCR			•	
	OTHER THAN ABOVE, EXPLAIN				-
18. OPER	RATIONAL DATA:			, 	
	CONTINUOUS FILLING AND DISCHARGING, AVERAGE DAILY LEVEL FLUCTUATION, AVERAGE DAILY VOLUME FLUCTUATION,	INCHES (FOR VE	RTICAL CYLINDRICA HORIZONTAL CYLIND	L TANKS). PRICAL AND SPHERICAL	Tanks).
\square	BATCH FILLING, AVERAGE NUMBER OF GALLONS PER FILLING, AVERAGE NUMBER OF FILLS PER YEAR,	195 420			
19. OPER	RATIONAL DATA:		UR (OR)	23 GAL. PFI	A HOUR
	AVERAGE OUTAGE: (AVER. DISTANCE FROM TO				
A	AVERAGE THROUGHPUT:	BARRELS PER	HOUP (OR)	GAL. PET	R DAY
	TANK TURNOVEPS PER YEAR:		·		
FOLI	MATERIAL STORED IS A PETROLFUM PPODUCT OR LOWING INFORMATION FOR EACH MATERIAL: AT SEE ATTACHMENT LBS. REID (TACH ADDITIONA	L SHEETS, IF NEG	ESSARY.	
ABSC	OLUTE ATOF	INITIAL BO	ILING POINT:		
21. IF	MATERIAL STORED IS A SOLUTION, SUPPLY THE	FOLLOWING INF	GRMATION:		
МАИ	ME OF SOLVENT:	NAME	OF MATERIAL DISS	SOLVED:	
CON	SCENTRATION OF				
22. IF 1NF	TERTAL DISSOLVED: MATERIAL STORED IS A GAS OR A LIQUIFIED G. FORMATION: IDENTIFY THE MATERIAL:			PODUCT, SUPPLY THE I	FOLLOWING
•	PRESSUPE AT WHICH NATERIAL IS STO			C. IN. GAGE AT	o _F
23. EST	rimated vapor loss 32 tons/year			5	
Tit.	ABOVE INFORMATION IS SUBMITTED TO DESCRIBE FERMIT IS BEING MADE ON THE ACCOMPANYING I	THE USE OF T	HE TANK FOR WHIC	TH APPLICATION	
SIGN	NATURE OF RESPONSIBLE MEMBER OF FIRM:	C. PEDWO	iros on f	June 7	2.197
	RINT NAME AND OFFICIAL TITLE . NAME:	J. C. Edwa	rds /V	PHONE / 246-2111,	Ext. 24
	TITLE.	Manager, C	lean Environm	ent Program	
	DO NOT WPITE BELOW	THIS LINE	· · · · · · · · · · · · · · · · · · ·		
COMMENTS:			DO NOT W	RITE IN THIS SPACE	
	·		AIR QUALITY RE	GION	
			AGENCY CODE 1		
			PERMIT NO.		
			REGISTRATION :	io. [
			PROCESS EMISSI	ON SOUPCE NO.	
			EMISSION POINT	. NO	<u>.</u>
			UTM ZONE (IF U	SED)	
			EW COCPD.		
REVIEWEF			на сость.		
DATE		 	SIC COPE		
		A-183	•		
	•		AVERAGE DAILY	LOSS TO ATMOSPHERE	

Process	Emissio	on Source
Number	B-261-1	
Page 2		
12444465	1)	

ATTACHMENT I

No. 20	Material	V.P. @ 330°F (FSIA)	Boiling Point (°F)
	thyl paraformyl benzoate	1^{h} . 7^{h}	500
	thyl paratoluate	14.92	420
Met	thyl benzoate	15.10	388
Dir	nethyl terephthalate	14.73	545
Met	thyl 4-methoxy methyl benzoate	15.10	395



Process	Emission	
Number_	в-261-1	l
Page 2	η of	22
Edition	B.	

•	STACK ELITISATION L	UMI DATA - F	116 - 22	
	•		COMPANY NO. L PERMIT NO. L PROCESS EMISSI	RITE IN THIS SPACE
1. COMPANY NAME TE PROCESS EMISSION SOURCE NUMB 3. EMISSION POINT NUMBER OR COD	er <u>B-261-1</u>		REVIEWER L	. لــــــا
INDICATE STACK OR RELEASE PO	INT HEIGHT ABOVE GRADE		40	FEET.
5. SHOW INSIDE DIAMETER OF STACE			.25	FEET.
SHOW NORMAL EXIT GAS TEMPERA			T GAS VELOCITY	1.96 FT/SEC.
INDICATE PERCENT OF TIME OVER	R 125 F	0	<u></u> %.	
9. SHOW EXIT GAS VOLUME FLOW RA	TE .09	96	FT ³ /SEC @ 70°F	AND 1 ATMOS.
SHOW MOISTURE CONTENT	O (GR./CU. FT. D	ORY GAS AT 70°F) AND	0	GR./CU. FT. GAS AT CONDITIO
1. SHOW DISTANCE FROM RELEASE PO	DINT TO NEAREST PROPERTY LI	NE55	0	_ FEET.
DIRECTION OF GAS STREAM AS 1	T LEAVES STACK	U-UP,	D D-DOWN,	H-HOR I ZONTAL
AIR POLLUTION CONTROL EQUIPME	ENT			
	AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFFICIENCY
PARTICULATE.	yes	1974	001	100%
SULFUR DIOXIDE				
OXIDES OF NITROSEN				
HYDROCARBONS				
CARBON MONOXIDE				
GASEOUS FLUORIDES				
	-			
			<u> </u>	

cess Emission Sour	cce Numb	er <u>B</u>	-261-1	Page 22	C C 2	22 Editi	on <u>B</u>
IS AN EMISSION MONITOR	NG AND REC	ORDING INST	RUMENT ATTACHED	TO THIS EMISSIO	OH POILLY YES		x
ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT DA	TA FOR THE	S EMISSION I	EMISSION PO	INT DATA			
			CONCE	ITRATION	AVERAGE E	MISSIONS	METHOD O
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LES/YEAR	MEASUREME
PARTICULATES				GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	17,			PPM			
OXIDES OF NITROGEN	1/			PPM			
CARBON MONOXIDE				РРМ			
GASEOUS FLUDRIDES				РРМ			
OTHERS (NAME CHEMICAL)							<u> </u>
Nitrogen			0.058	lb./ft.3	20	168,000	Flow mete
Methanol			0.027	lb./ft.3	9.4	79,000	Culculati from varo
				1		12,000	press. da
			FOR OFFIC	E USE ONLY			
PROCESS WEIGHT TABLE EMISSION POINT IS NO	T IN COMPL	IANCE WITH A	PPLICABLE PART	•		E EMISSIONS	
EMISSION POINT IS NO.		LANCE WITH S			·		
EMISSION POINT IS NO	T IN COMPL		ULFUR DIOXIDE	EMISSION STANDAR	D OF 500 PPM.		AND ALLOWAR
EMISSION POINT IS NOT	T IN COMPL	ANCE WITH G	ULFUR DIOXIDE	EMISSION STANDAR	D OF 500 PPM.		_ AND ALLOWASI
EMISSION POINT IS NOT	T IN COMPL	ANCE WITH G	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE	D OF 500 PPM.		_
EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS EMISSIONS	IN COMPLI	ANCE WITH G	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE N STANDARD. IDE	D OF 500 PPM. NTIFY GAS NTIFY GAS		_ AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S	IN COMPLETIN COM	ANCE WITH G	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE N STANDARD. IDE	D OF 500 PPM. NTIFY GAS NTIFY GAS		AND ALLOWABL
EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS EMISSIONS	IN COMPLETIN COMPLETED IN COMPL	ANCE WITH G	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE N STANDARD. IDE	D OF 500 PPM. NTIFY GAS NTIFY GAS		AND ALLOWABL
EMISSION POINT IS NOT EMISSION POINT IS NOT EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLET IN COMPLETE IN COMP	ANCE WITH G ANCE WITH G ABLE. CEPTABLE.	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE N STANDARD. IDE	D OF 500 PPM. NTIFY GAS NTIFY GAS		AND ALLOWABL
EMISSION POINT IS NOT EMISSIONS EMISSIONS EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IN COMPLET IN COMPLETE IN COMP	ANCE WITH G ANCE WITH G ABLE. CEPTABLE.	ULFUR DIOXIDE	EMISSION STANDAR N STANDARD. IDE N STANDARD. IDE	D OF 500 PPM. NTIFY GAS NTIFY GAS		AND ALLOWARL



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PERMIT APPLICATION - APC 20

TENNESSEE DEPARTMENT OF PUBLIC HEALTH	DO NOT WRITE IN THIS SPACE
MAIL TO: DIVISION OF AIR POLLUTION CONTROL	COMPANY NO.
CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219	AQCR L AGENCY CODE L
T. PERMIT TO BE ISSUED TO:	NEDS COUNTY CODE I
	PERMIT NO L
TENNESSEE EASTMAN COMPANY	PROCESS EMISSION SOURCE NO.
2. MAILING ADDRESS	EMISSION POINT NO.
P. O. Box 511	CITY CODE LL UTM ZONE
Kingsport, Tennessee 376	62 EW COORD. L. L. L.
ADDRESS AT WHICH SOURCE IS TO BE OPERATED:	NS COORD.
	SIC CODE
Same as above.	REVIEWER LLL
	DATE LLLL
_	
TYPE OF OPGALIZATION: CORPORATION X	
5. EMISSION SOURCE NUMBER B-261A-1 6. STAN	DARD INDUSTRIAL CLASSIFICATION OF CO. L2 18 11 15 1
. PRIEF DESCRIPTION OF EMISSION SOURCE FOR WHICH PERMIT IS	DESIRED: Dimethyl terephthalate plant No. 4
. LATITUDE AND LONGITUDE OF AIR CONTAMINANT SOURCE	31' 23N 82° 32' 12W
2. COST OF MODIFICATION \$ COST OF	AIR POLLUTION CONTROL EQUIPMENT \$
	MIT GIVE NAME OF CORPORATION, COMPANY OR INDIVIDUAL OWNER THAT
OPERATED THIS SOURCE AND STATE PREVIOUS TENNESSEE DIVISIO	
NAME TENNESSEE EASTMAN COMPANY	PERMIT NUMBER
1. PRESENT STATUS OF AIR CONTAMINANT SOURCE (CHECK AND COMPL	
PERMIT TO CONSTRUCT REQUESTED - Est. Starting Date	Est. Completion Date
X CONSTRUCTION COMPLETED - Date 1967	PERMIT TO OPERATE REQUESTED
ISANSFER OF LOCATION - Est. Date	AIR CONTAMINANT SOURCE HAS NOT BEEN ALTEPED
0	
STORATURE OF RESPONSIBLE MEMBER OF FIRM	JUL 2 5 1976 DATE OF APPLICATION
V 2 2 M SPC (II MESI 1/3 / CEC MUMBER (A F FRM	DATE OF AFFEIGHTION
5. TYPE OR PRINT NAME AND OFFICIAL TITLE OF NAME AND OFFICIAL TITLE OF NAME AND OFFICIAL TOTAL OF NAME AND OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL TITLE OFFICIAL T	E J. C. Edwards
- TI	LE Manager, Clean Environment Program
PHC	NE 246-2111, Extension 2444



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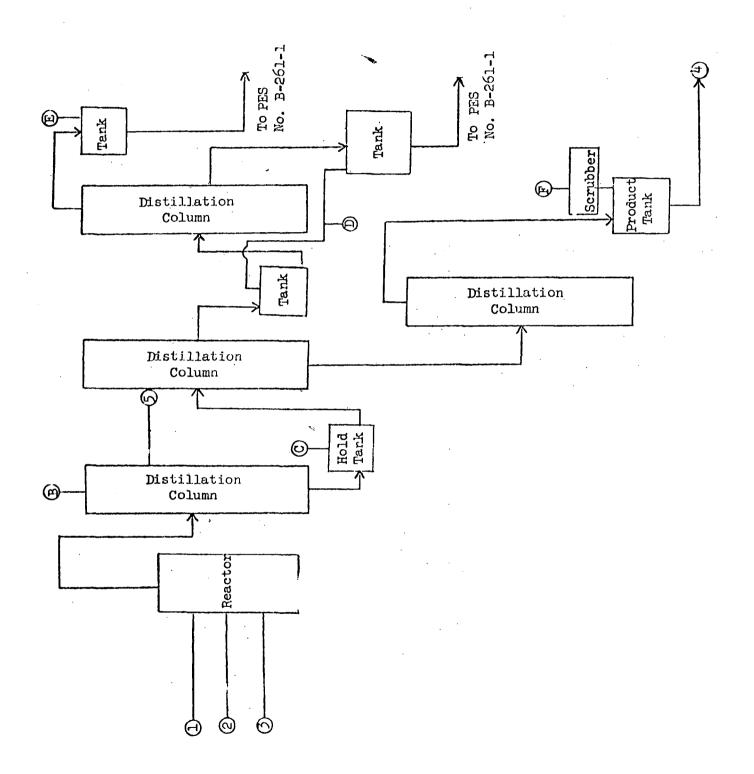
PROCESS EMISSION SOURCE COVER SHEET - APC 21

MA	IL TO:	TEINESSEE DEPARTMENT OF PUBLIC HEALTH DIVISION OF AIR POLLUTION CONTROL CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37217			COMPANY NO.		GPACE
					i		
					EMISSION POI	NI NO. L.	-
					REVIÈWER		•
1.	COMPANY NAME	TENNESSEE EASTMAN COM	(PANY		DATE		·
2.	PROCESS EMISS			3. SIC CO	DE 2	815	- YES
4.		ION OF THIS PROCESS BEGIN ON OR BEFORE AUGUS					
5.	GIVE A BRIEF O	DESCRIPTION OF THE PROCESS ALONG WITH A FLOW UTS AND EMISSION POINTS SHOULD BE NOTED IN P	DIAGRAM. C	PERATION CE	NTERS, STORAGE	POINTS, MATERIAL	STC9N1,
		chalic acid and methanol are reac				phthalate.	<u>l'he</u>
	remaind	der of the process is distillation	n to remo	ve impuri	ties.		
	NOTE ATTACU	FLOW DIAGRAM FOR PROCESS EMISSION SOURCE CL.	A LICE ON SEC	ADATE SUCCE			
6.	TYPE OF PROCES		ватсн		COMBINED		
7.	OPERATIONAL SO	CHEDULE OF PROCESS EMISSION SOURCE:					
	A. HOURS PER	DAY 24	D.	% ANNUAL THE	RUPUT		
		WEEK 7		DEC-FEB	MARCH-MAY	JUNE-AUGUST	SEPT-NOV
		YEAR 50		25	25	25	25
8.	LIST MATERIAL	INPUTS TO PROCESS EMISSION SOURCE:					
				LBS/OPE	TRATING JR	FLOW DIAGRAM	
	NAME OF	- INPUT		DESIGN CAPACITY	ACTUAL LOADING	REFEREN	l l
	A. Methano	0].		9760	9760	1	· ·
	B. Terepht.	holic Acid		24,690	24,690	2	
	c. Xylene			45	45	3_	
	D.						
	Ε.						
	F.						
	6.						
	TOTAL LESSOPERA	ATING HOUR INPUT TO PROCESS EMISSION SOURCE		34,500	34,500		

APC - 21 REV 5/73

(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)

LIST MATERIAL OUTPUTS FROM THIS PROCES	S EMISSION SOURCE:		·	Number B-261A-1 Page 3 of 15 Edition B	
		LDS/OPERATING HOUR		FLOW DIAGRAM	
NAME OF OUTPUT		CAPACITY HOL	LASTYAL LASTYAL	REFERENCE	
A. Dimethyl Terephthelate		28,500	28,500	4	
8. Water		5420	5420	5	
С,					
0.					
Ε.					
F.					
G.					
TOTAL LBS/OPERATING HOUR OUTPUT FROM P	ROCESS EMISSION SOURCE	33,900	33,900	(TOTAL ROUNDED TO THREE SIGNIFICANT FIGURES)	
IO. LIST AIR POLLUTION EMISSION POINTS FOR APC-22, FOR EACH POINT.	THIS PROCESS EMISSION S	SOURCE. ATTACH	I A SEPARATE "E	•	
EMISSION POINT NO. OR CODE	LBS PARTICULATE/OF	PERATING HOUR	FLO	OW DIAGRAM REFERENCE	
Α.					
в. В*	()		В	
c. C	()		C	
D. E	C)		Е	
E. F	()	4	· F	
F.					
TOTAL LBS. OF PARTICULATE EMITTED FROM	PROCESS EMISSION SOURCE	PER OPERATING	HOUR	0	
NOTE: ATTACH ADDITIONAL SHEETS AS REQUIRED *Submitted July, 1970, as Ve				(TOTAL ROUNDED TO THO SIGNIFICANT FIGURES)	
1. J.C. EDWARDS/	1011 £		Pion	c 21, 1976	
SIGNATURE OF RESPONSIBLE	MEMBER OF FIRM		/ DATE O	FAPPLICATION	
2. TYPE OR PRINT NAME AND OFFICIAL TITLE	NAME	J. C. Edwa	ards	·	
OF PERSON SIGNING THIS FORM	TITLE	Manager, (Clean Envir	onment Program	
		JUN 2 7 197	74		
	DATE			PHONE 246-2111, Ext. 2444	
	FOR OFFICIAL USE	ONLY			
PROCESS EMISSION SOURCE CLAIMED IS A	•			•	
PROCESS EMISSION SOURCE CLAIMED IS NO	OT ACCEPTABLE.				
RECOMMENDED MAKE UP OF PROCESS EMISS	ION SOURCE ATTACHED ON S	EPARATE SHEET.			
PROCESS EMISSION SOURCE IS NOT IN COM	APLIANCE WITH APPLICABLE	REGULATIONS.			
PROCESS WEIGHT TABLE APPLIES TO THIS	PROCESS EMISSION SOURCE	•	•		
DIFFUSION EQUATION APPLIES TO THIS PE	ROCESS EMISSION SOURCE.	TABL	E 1	TABLE II	
LOVABLE EMISSIONS	L85/HOUR	ACTUAL EMISSIO	ONS	TONS/YEAR	
IL ING IS AUTHORIZED BY		DATE			





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MECHANISM AT 1 203 .(GR./CU. FT. 1	-1 5510N SOURCE COVER SI 50P	PERMIT NO. L PROCESS EMISS EMISSION POINT REVIEWER L DATE L L JO 30 33 T GAS VELOCITY %. FT ³ /SEC © 70°F	C FEET. FEET096 FT/SEC. AND 1 ATMOS. [GR./CU. FT. GAS AT COMDITION
B-261A ON PROCESS EMIS BOVE GRADE MECHANISM AT 1 203 .C	SSION SOURCE COVER SI TOP F. 7. SHOW EXI 100 0082 DRY GAS AT 70°F) AND	PERMIT NO. L PROCESS EMISS EMISSION POINT REVIEWER L DATE L L JO 30 33 T GAS VELOCITY %. FT ³ /SEC © 70°F	ION SOURCE NO. L. T NO. L. L. T NO. L.
B-261A ON PROCESS EMIS BOVE GRADE MECHANISM AT 1 203 .C	SSION SOURCE COVER SI TOP F. 7. SHOW EXI 100 0082 DRY GAS AT 70°F) AND	PROCESS EMISS EMISSION POINT REVIEWER L DATE L L SEET). 30 .33 T GAS VELOCITY %. FT ³ /SEC @ 70°F	ION SOURCE NO. L. T NO. L.
B-261A ON PROCESS EMIS BOVE GRADE MECHANISM AT 1 203 .C	SSION SOURCE COVER SI TOP F. 7. SHOW EXI 100 0082 DRY GAS AT 70°F) AND	EMISSION POINT REVIEWER L DATE L 1 SEET). 30 .33 T GAS VELOCITY %. FT ³ /SEC @ 70°F O	C FEET C FEET .096 FT/SEC AND 1 ATMOS. (GR./CU. FT. GAS AT CG::DITH
B-261A ON PROCESS EMIS BOVE GRADE MECHANISM AT 1 203 .C	SSION SOURCE COVER SI TOP F. 7. SHOW EXI 100 0082 DRY GAS AT 70°F) AND	REVIEWER L DATE L 1 SEET). 30 .33 T GAS VELOCITY %. FT ³ /SEC @ 70°F 0	C FEET FEET .096 FT/SEC AND 1 ATMOS. [GR./CU. FT. GAS AT CG::DITH
B-261A ON PROCESS EMIS BOVE GRADE MECHANISM AT 1 203 .C	SSION SOURCE COVER SI TOP F. 7. SHOW EXI 100 0082 DRY GAS AT 70°F) AND	DATE L L L SEET). 30 33 T GAS VELOCITY %. FT ³ /SEC @ 70°F	C FEET FEET .096 FT/SEC AND 1 ATMOS. [GR./CU. FT. GAS AT CG::DITIE
ON PROCESS EMISONE GRADE MECHANISM AT 1 203 .C	F. 7. SHOW EXIONSOLOGE ONE OF SHOW EXIONS	30 -33 T GAS VELOCITY %. FY ³ /SEC @ 70°F O	C FEET FEET .096 FT/SEC AND 1 ATMOS. [GR./CU. FT. GAS AT CG::DIT]
MECHANISM AT 1 203 .(GR./CU. FT. 1	TOP	30 .33 T GAS VELOCITY%	FEET .096 FT/SEC AND 1 ATMOS. [GR./CU. FT. GAS AT CG::DITIE
MECHANISM AT 1 203 .(GR./CU. FT. 1	TOP	.33 T GAS VELOCITY	FEET .096 FT/SEC AND 1 ATMOS. [GR./CU. FT. GAS AT COMDITION
203 .((GR./CU. FT. 1	°F. 7. SHOW EXI 100 0082 ORY GAS AT 70°F) AND	T GAS VELOCITY%. FT ³ /SEC @ 70°F	.096 FT/SEC. AND 1 ATMOS. [GR./CU. FT. GAS AT CONDITION
203 .((GR./CU. FT. 1	°F. 7. SHOW EXI 100 0082 ORY GAS AT 70°F) AND	T GAS VELOCITY%. FT ³ /SEC @ 70°F	.096 FT/SEC AND 1 ATMOS. (GR./CU. FT. GAS AT CG::DIT)
.((GR./CU. FT. [100 0082 DRY GAS AT 70°F) AND	%. %. 	AND 1 ATMOS. [GR./CU. FT. GAS AT CG::DIT]
(GR./CU. FT. [DOS2	FT ³ /SEC @ 70°F	[GR./CU. FT. GAS AT CONDITI
(GR./CU. FT. [DRY GAS AT 70°F) AND	0	[GR./CU. FT. GAS AT CG::DITI
(GR./CU. FT. [DRY GAS AT 70°F) AND	0	(GR./CU. FT. GAS AT CGEDITI
ST PROPERTY LI	INE46	ie:	
		2	- FEE1.
К	U~UP.	T) D-DOWN	H-HOR (ZONTAL
**************************************		-	
.~			T
TROLLED	YEAR Installed	TYPE 1	EFFICIENCY
			
			1

IF YES, DESCRIBE:				TO THIS EMISSIO		мо	
ADDITIONAL COMMENTS:							
SHOW AIR CONTAMINANT DA	ITA FOR THI	S EMISSION I	EMISSION PO	NT DATA			
			CONCEN	TRATION	AVERAGE I	EM ISSIONS	METHOD OF
POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT
PART ICULATES	/			GRAINS/SCF AT 70° F			
SULFUR DIOXIDE	/			PPM			
OXIDES OF NITROGEN				PPM			
CARBON MONOX IDE			2468	PPM	.0097	81,4	Calculation
GASEOUS FLUDFIDES	/	•		PPM			
OTHERS (NAME CHEMICAL)							
Xylene			.067	lbs/ft ³	1.99	16,700	Calculation
Inert Gas			.066	lbs/ft3	1.94	16,280	Calculation
	·						,
			FOR OFFIC	E USE ONLY			
PROCESS WEIGHT TABLE	APPLIES TO	THIS EMISS	ION POINT.				·
EMISSION POINT IS NO	IN COMPLI	ANCE WITH A	PPLICABLE PART	ICULATE REGULATION	ON. ALLOWABL	E EMISSIONS	#/
EMISSION POINT IS NOT		,					
EMISSION POINT IS NOT					•		
EMISSION POINT IS NOT			ASEOUS EMISSION	N STANDARD. IDEI	NTIFY GAS		_ AND ALLOWABLE
EMISSIONS							
T GUESTINI MUT IS	IN COMPLI	ANCE WITH G	ASEUUS EMISSIOI	N STANDARD. IDE	WITTY GAS	 	_ AND ALLOWABLE
EMISSION POINT IS NOT							DECOMMENSES
EMISSIONS) EOP /11				; (3)		RECOMMENDED.
EMISSIONS CONTINUOUS MONITOR (S			; (2)				
EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IS ACCEPT	ABLE.	; (2)				
EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT METHOD OF MEASUREMENT	IS ACCEPT	ABLE. CEPTABLE.					
EMISSIONS CONTINUOUS MONITOR (S METHOD OF MEASUREMENT	IS ACCEPT	ABLE. CEPTABLE.					



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Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH ALL TO:DIVISION OF AIR PULLUTION CONTROL CORDELL HULL BUILDING C2-212 NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE EASTMAN COMPANY

, 			
2.	TANK ECCATION:	LATITUDE	LONGITUDE
	B-261A, 2nd floor	36 31 22N	82 32 13W
3.	TANK IDENTIFICATION (NUMBER OR NAME):	•	
<u>, ,</u>	FB-52 (Vent D) TANK CAPACITY:		
4.	BARRELS	GALLONS 7094	
5.	TANK DIMENSIONS: DIAMETER 9 1/2 ft, HEIGHT 11 1/2	2ft.engthwilth	
6.	TANE SHAPE: CYLINDRICAL [X] S PHERICAL [OTHER		
7.	TANK MATERIALS OF CONSTRUCTION:		<u> </u>
8.	TANK PAINT:	OTHER SPECIFY	
	CHALKING WHITE LIGHT GREY OR B	LUE ALUMINUM X	
5.	TANK CONDITION: GOOD X FAIR	3009	
10.	TANK STATUS:	LIERATION Not Applie	cable
n.	TYPE OF TANK:		
•	FIXED ROOF X PRESSURE	INTERNALLY HEATED	
	UNDERGROUND FLOATING ROOF OPEN TO	P INSULATED TO OTHER	
	(CHECK ALL APPLICABLE)		·
12.	IF TANK IS TO HAVE FLOATING ROOF, SUPPLY THE FOLLO	NING INFORMATION:	
	TYPE OF ROOF: DOUBLE DECK PONTO	ON OTHER DESCRIE	BE
•	TYPE OF SEAL: SINGLE DOUB.	LE OTHER DESCRIE	BE
	TYPE OF SHELL	·	
13.	CONSTRUCTION: RIVETED WILD IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER	CD OTHER DESCRIE	AE
13.	TE TANK IS TO HAVE MAY OTHER TYPE OF ROOF OR COVER	(THE NORE AT ALIA), DESCRIBE:	·
14.	VENT VALUE DATA: INDICATE TYPE, NUMBER, SETTINGS	AUD VANDE BISSOSMI	
,	NUMBER PRESSURE V	ACOUM DISCHARGI	ING TO: (CHECK)
		72 oz. ATMOSPHERE VAPOR	CONTROL FLARE
	PRESSURE (Same vent used for FD-51		
	VACUM		
	DPEN		
15.	NAME ALL LIQUIDS, VAPORS, GASES OR MEATURES OF SUCH MA		
	AVERAGE MOLECULAR WEIGHT 153 600	POSITION (2) 20% Dimethyl 57% Methyl par 21.5% Nethyl ber	terephthalate ratoluate
	DENSITY: 8.5 LES/GAL.	21.5% Methyl ber 1.5% Methyl par	nzoate raformyl benzoate
1.6.	TEMPERATURES AT WHICH THE ABOVE LISTED NATERIALS ARE T (NORMAL AVERAGE DAILY MINIMUM AND MAXIMUM TEMPERATURES		•

÷,,,		THE VIEW CONTROLLING VIEWS				Process Emissio Number B-261A-	n Sourc
	<u>[X]</u>	CONSERVATION VENT OR RELIEF VALVE.				Page 8 of	- 16
	\square	CONDENSER, AVERAGE EXIT GAS TEMPERATURE FROM CON	IDENSER,	•r.	,	Edition B	
	\Box	SCRUBBER, AVERAGE ORGANIC CONCENTRATION IN OUT	LET SCRUBI	BER GAS,	LBS/FT.		
٠.	\Box	OTHER THAN ABOVE, EXPLAIN					 •
18.	OPER	MATIONAL DATA:	<u></u>				
20.							
•	<u>[X]</u>	CONTINUOUS FILLING AND DISCHARGING, AVERAGE DAILY LEVEL FLUCTUATION, AVERAGE DAILY VOLUME FLUCTUATION,					√KS).
	\Box	BATCH FILLING,					
		AVERAGE NUMBER OF CALLONS PER FILLING			•		
		AVERAGE NUMBER OF FILLS PER YEAR,					
19.	OPER M	ATIONAL DATA: AXIMUM FILLING RATE:	BAF	RELS PER HC	UR (OR) 200	O GAL. PER H	IOUK
		VERAGE OUTAGE: (AVER. DISTANCE F					
	A	VERAGE THROUGHPUT:		BARRELS PER	HOUR (OR)	GAL. PER D	PAY
		ANK TURNOVEPS PER YEAR:					
20.	FOLL	NATERIAL STORED IS A PETROLEUM PRODUCTION OF EACH MATERIAL SEE ATTACHMENT IN PRESSURE: LBS. 1	: ATTAC	H ADDITIONA	L SHEETS. IF NECES	SSARY.	
		OLUTE AT OF	(EID (ON)	INITIAL EC	ILING POINT.	. 1". Or	
21.		MATERIAL STORED IS A SOLUTION, SUPPL	LY THE FO	LLOWING INF	ORMATION:		
		E OF SOLVENT:				LVER:	
	•	CENTRATION OF					—
	MAT	ERIAL DISSOLVED: MATERIAL STORED IS A GAS OR A LIQUID	_ % BY WE	IGHT (OF) _	3 BY VOL	UME (OR) LBS/C	MALLON
22.	INF	ORMATION:				SUCT, SUPPLY THE FOL	.LOWING
		IDENTIFY THE MATERIAL:				•	
		PRESSUPE AT WHICH NATERIAL		D:	LBS. PER SQ.	IN. GAGE AT-	
23.		THATED VAPOR LOSS .23 TONS		·			
٠.	FOR I	ABOVE INFORMATION IS SUBMITTED TO DE FERMIT IS DEING MADE ON THE ACCOMPAN	SCRIBE T	HE USE OF TI	HE TANK FOR WHICH	APFLICATION	
		ATURE OF RESPONSIBLE MEMBER OF FIRM:	<u></u>	- EDW	HRDS 19AT	June 2)	1970
		KINT NAME AND OFFICIAL TITLE SIGNING THIS DATA FORM. N	iane: J	. C. Edwa	rds Pho	CNE 246-2111, E	xt. 244
		4	TITLE. M	anager. C	lean Environmen	· ·	
		DO NOT WPITE					
COMME	NTS:			,	DO NOT WELL	TE IN THIS SPACE	
					AIR QUALITY REGI	.os <u>[</u>	
					AGENCY CODE	! .	
					PERMIT NO		
				:	REGISTRATION NO.		
•					PROCESS EMISSION	SOUPCE NO.]
					EMISSION POINT N	0.111-111	J
		•			UTM ZONE (IF USE	0) []	
					EW COCRD.		
REVIE	WER				NE COOPD.		
					SIC COPE		
DATE				A-194			
				D-134		MA AO AMBOUREDED	

Process Number	Emission $B-261A-1$	Source
Page 9	of	16
Eddedon	7	

ATTACHMENT I

No.	20
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Material	V.P. @ 300°F (PSIA)	Boiling Point (°F)
Dimethyl terephthalate	14.72	545
Methyl paratoluate	14.82	420
Methyl benzoate	14.96	388
Methyl paraformyl benzoate	14.72	500



Process	Emission	Source
Number_	B-261A-1	
Page 10) of	16
Edition	В	

Storage Tank Summary

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
MAIL TO:DIVISION OF AIR POLLUTION CONTROL
CORDELL HULL BUILDING C2-212
NASHVILLE, TENNESSEE 37219

ONE COPY OF THIS FORM MUST BE FILLED OUT COMPLETELY FOR EACH TANK AND MUST ACCOMPANY THE APPLICATION FOR PERMIT, APC-20.

1. TENNESSEE EASTMAN COMPANY

2.	TANK LOCATION:				LATITUDE	LONG	ITUDE	
	B-261A, 3rd	floor	• •		36 31 22N	82 3	32 13W	
3.	TANK IDENTIFICAT	TION (NUMBER OR N	AME):	· · · · · · · · · · · · · · · · · · ·				_
	FD-51 (Ven	t D)						
4.	TANK CAPACITY:	BAR	RELS		GALLONS 920			
5.	TASK DIMENSIONS:		нетонт 5 1,	·				
6.	TALK SHAPE:							
7.	CYL TANK MATERIALS O	INDRICAL SPE	ERICAL OTHE	ER SHAPE[DESCRIBE			- -
			STEEL X WOOD	OTHER	SPECIFY	,		=
8.		CHALKING WHITE		R BLUE	ALUMINUS	יבאבו		
3.	TANK CONDITION:	GOUD X	FAIR [POOR E				-
10.	TANK STATUS:				Mot	Applicable		
11.	TYPE OF TANK:		RUCTION [ALTERATION	NOU	. Applicable	:	
		FIXED ROOF	D PRESSU	JRE	INTERNALLY F	FATED		
	UNDERGROUND	FLOATING ROOF	OPEN	TOP IN	SULATED X	OTHER		
	(CHECK ALL APPLIC					•		
12.	IF TANK IS TO HA	VE FLOATING ROOF	, SUPPLY THE FOL	LOWING INFUR				_
	TYPE OF ROOF:	DOUBLE DE	PON	TOON	OTHER	ESCRIBE		_
	TYPE OF SEAL:	SING	LE DO	OUBLE	OTHER	ESCRIBE		
	TYPE OF SHELL CONSTRUCTION:	RIVE VE ANY OTHER TYPE	red we	LDED	OTHER	ESCRIBE		
13.	IF TANK IS TO HA	VE ANY OTHER TYPE	OF ROOF OR COV	ER (OR NONE	AT ALL), DESCRI	BE:		
				<u> </u>				_
14.	VENT VALVE DATA:	NUMBER TYPE,	NUMBER, SETTING	S AND VAPOR I		CHARGING TO:	(CHECK)	
	COMBINATION			SETTING	ATMOSPHERE	VAPOR CONTROL	FLARE	_
	COMBINATION	PSV-FB-054	• ;	L/2 oz.				
	PRESSURE	Same vent	used for FB-5	2 tank)				
	VACUM				·			
	OPEN							
15.	NAME ALL LIQUIDS,	VAPORS, GASES OR	MIXTURES OF SUCH	MATERIALS TO	BE STORUD IN THE	IS TANK! former	l benzoste	_
	NAME ALL LIQUIDS, AVERAGE MOLECULAR DENSITY: {	WEIGHT		COMPUSITION (z) 15% Methy 10% Dimet	i paratolua hyl terepht	te halate	
	DENSITY:	3.5	LBS/GAL.		2.5% Methy	T pennoate 1 4-methoxy	methyl ben	zoa
16.	TEMPERATURES AT WE	ICH THE ABOVE LIS	TED MATERIALS ARE	E TO BE STORED	IN THIS TANK:			

NINIMUM TEMPERATURE 320 °F

(NORMAL AVERAGE DAILY MINDRUM AND MAXIMUM TRAPPERATURES)

MAXIMUM TEMPERATURE 330 °F

17.	SPEC	TAI, VAPOR CONTROLLING /ICES:					Emission	
	Ø	CONSERVATION VENT OR RELIEF VAL	VE.				B-261A-1	
	\Box	CONDENSER, AVERAGE EXIT GAS TEMPERATURE FRO	OM CONDENSI	ER,	r.		l of B	
	\Box	SCRUBBER, AVERAGE ORGANIC CONCENTRATION IN	N OUTLET SO	CRUEBER GAS,	LRS/FT°.			
	<i>[</i> 7	OTHER THAN ABOVE, EXPLAIN		·		,	<u></u> •	1
18.	OPER	ATIONAL DATA:						
		CONTINUOUS FILLING AND DISCHARG AVERAGE DAILY LEVEL FLUCTUATION AVERAGE DAILY VOLUME FLUCTUATION		INCHES (FOR V	ERTICAL CYLINDRICAI HORIZONTAL CYLINDR	TANKS). RICAL AND SPE	HERICAL TANK	ട).
	<u>(</u> 27	BATCH FILLING, AVERAGE NUMBER OF GALLONS PER F AVERAGE NUMBER OF FILLS PER YEA						
19.	OPER	ATIONAL DATA: AAIMUM FILLING RATE:			GUR (OR)	50 (CAL PER HC	
		VERAGE OUTAGE: (AVER. DISTAN						
		VERAGE THROUGHPUT:						ΛŸ
		ANK TURNOVEPS PER YEAR:			<u> </u>			
20.	FOLL S VAPO	ATERIAL STORED IS A PETROLFUM I OWING INFORMATION FOR EACH MATI JEE ATUACHMEUT R FRISSURE:	ERIAL: A LBS. REID	TTACH ADDITION	LBS. PER S	ESSARY. Q. IN.		
	ABSO	LUTE AT OF		INITIAL B	OILING POINT:		oF	
21.	1F	MATERIAL STORED IS A SOLUTION,	SUPPLY TH	E FOLLOWING IN	FORMATION:	·	<u></u>	
	NAM	E OF SOLVENT:		NAME.	OF MATERIAL DISS	OLVED:		
. ,	CON	CENTRATION OF	% B	Y WEIGHT (OR)		LUME (OR)	1 P5.7G1	ar ron
22.	IF INF	MATERIAL STORED IS A GAS OR A I ORMATION: IDENTIFY THE MATERIAL				COUCT, SUPP	LY THE FOLL	IWING
		PRESSUPE AT WHICH MATE				. IN. GAGE	A1'	—-оғ
23.	EST	imated vapor loss						
,	THE /	ABOVE INFORMATION IS SUBMITTED FERMIT IS BEING MADE ON THE ACC	TO DESCRI	BE THE USE OF	THE TANK FOR WHIC	H APFLICATIO	Ж	
7:VI.E		ATURE OF RESPONSIBLE NEMBER OF	FIRM: -	1.C. EDWI	PROS PAP	Sen	×22/	1974
		SIGNING THIS DATA FORM.	NAME:	J. C. Edw	ards / P	HONE 246-	-2111, Ex	t. 244
			TITLE	. Manager,	Clean Environm	ent Progra	ım	
		DO NOT V	PITE BELO	W THIS LINE				
COMME	NTS:				DO NOT W	RITE IN THIS	SPACE	•
					AIR QUALITY REG	SION L		
		•			AGENCY CODE _	111		
					PERMIT NO.	1111	! I	•
					REGISTRATION NO	. [] [
					PROCESS EMISSION	ON SOUPCE NO). <u>[] </u>	
					EMISSION POINT	NO.		
					UTM ZONE (IF US	ED) []		
					EW COCPD.	للللل		
REVIE	WER			-	NE COUPD.	للللل		
DATE					SIC COPE			
UNIE	·	. The set of the section of the sect						
				A-197	AVERAGE DAILY I	OSS 10 ATMO	SPREKE	

Process Emission Source Number $B-261\Lambda-1$ Page 12 of 16 Edition B

ATTACHMENT I

No.		v.p. @ 330°F (PSIA)	Boiling Point (°F)	
	Methyl paraformyl benzoate Methyl paratoluate Methyl benzoate Dimethyl terephthalate Methyl 4-methoxy methyl benzoate	14.74 14.92 15.10 14.73 15.10	500 420 388 545 395	



Process Emission Source Number $B-261\Lambda-1$ Page 13 of 16 Edition B

WA	TENNESSEE DEPARTME DIVISION OF AIR PO C2-212 CORDELL HUL NASHVILLE, TENNESS	L BUILDING		COMPANY NO. L PERMIT NO. L PROCESS EMISSI	RITE IN THIS SPACE
1,	COMPANY NAME TENI	NESSEE EASTMAN COM	PANY	REVIEWER	
2.	PROCESS EMISSION SOURCE NUMBER			DATE	
	MISSION POINT NUMBER OR CODE		SSION SOURCE COVER SHE	ET).	E
4,	NOTICATE STACK OF RELEASE POINT	T HEIGHT ABOVE GRADE		15	FEET.
5.	SHOW INSIDE DIAMETER OF STACK	OR RELEASE MECHANISM AT	тор	0.33	FEET.
6.	HOW NORMAL EXIT GAS TEMPERATUR	RE 239	°F. 7. SHOW EXIT	GAS VELOCITY	.0025 FT/SEC.
8.	INDICATE PERCENT OF TIME OVER	125°F	100	<u> </u>	
9.	HOW EXIT GAS VOLUME FLOW RATE	. 0002	21	FT3 /SEC @ 70°F	AND 1 ATMOS.
0.	HOW MOISTURE CONTENT	O (GR./CU. FT. (DRY GAS AT 70°F) AND _	0	(GR./CU. FT. GAS AT COMDITION:
	SHOW DISTANCE FROM RELEASE POIN)	
2.	IRECTION OF GAS STREAM AS IT L	EAVES STACK	U-UP,	D-DOWN,	H-HOR I ZONTAL
3,	AIR POLLUTION CONTROL EQUIPMENT				
		AIR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE 1	EFFICIENCY
1	ARTICULATE				
	SULFUR DIOXIDE				
1	XIDES OF NITROGEN				
ı	YDROCARBONS				
_	CARBON MONOXIDE				
	PASEOUS, FLUORIDES				
_					

Pro	cess Emission Sourc	e Numb	er B-	261V - 1	Page 14	<u></u>			
14									
15,	ADDITIONAL COMMENTS:								
EMISSION POINT DATA 16. SHOW AIR CONTAMINANT DATA FOR THIS EMISSION POINT:									
				CONCENTRATION		AVERAGE EMISSIONS		METHOD OF	
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT	
	PARTICULATES	/			GRAINS/SCF AT 70° F				
	SULFUR DIOXIDE	1			PPM				
	OXIDES OF NITROGEN	/			PPM				
	CARBON MONOXIDE			4000	PPM	.0003	2.49	Analysis & Calculation	
	GASEOUS FLUORIDES	1			PPM				
	OTHERS (NAME CHEMICAL)								
	Methyl paratoluate			.008	lbs/ft ³	0.0058	49	Calculation	
	Methyl benzoate		/	.009	lbs/ft ³	0,0067	56	Calculation	
	Xylene			.004	lbs/ft ³	0.0033	28	Calculation	
	Inert Gas			.078	lbs/ft.3	0.0592	497	Calculation	
				FOR OFFICE	E USE ONLY				
<u></u>	PROCESS WEIGHT TABLE A	PPLIES TO) THIS EMISS	ION POINT.					
	EMISSION POINT IS NOT				ICULATE REGULATI	ON. ALLOWABLE	EMISSIONS	#/hr	
	EMISSION POINT IS NOT							 "'	
	EMISSION POINT IS NOT								
	EMISSION POINT IS NOT							AND ALLOWABLE	
	EMISSIONS								
	EMISSION POINT IS NOT			ASEOUS EMISSION	STANDARD. IDE	NTIFY GAS		AND ALLOWABLE	
	EMISSIONS								
	CONTINUOUS MONITOR (S)			; (2)		; (3)		RECOMMENDED.	
	METHOD OF MEASUREMENT I							•	
	METHOD OF MEASUREMENT I	S NOT AC	CEPTABLE.						
	EXPLAIN	;							
ALLOV	VABLE EMISSIONS (TONS/YEAR		`						
	PARTICULATES SULFUR DIOXIDE HYDROCARBONS								
		REON MON	OXIDE						
	CA IC 15 ALITINDI7FA RY	NOON FION				FLUORIDES			
	DATE								



Process Emission Source
Number B-261A-1
Page 15 of 16
Edition B

	TENNESSEE DEPARTM	MENT OF PUBLIC HEALTH	DO NOT V	DO NOT WRITE IN THIS SPACE		
VAIL TO:	DIVISION OF AIR P		COMPANY NO I	COMPANY NO. L.		
	C2-212 CORDELL HU		1			
	NASHVILLE, TENNES	SSEE 37213		PERMIT NO P		
_			PROCESS EMISSION SOURCE NO.			
				EMISSION POINT	NO	
1. COMPANY N	NAMF TEN	NNESSEE EASTMAN COM	T) A NYW	REVIEWER		
-		R B-261A		DATE		
		(AS SHOWN ON PROCESS EMI			77	
_	1		÷		<u> </u>	
4. INDICATE	STACK OR RELEASE POI	NT HEIGHT ABOVE GRADE		40	FEET.	
5. SHOW INS!	DE DIAMETER OF STACK	OR RELEASE MECHANISM AT	ТОР	.25	FEET.	
6. SHOW NORM	MAL EXIT GAS TEMPERATI	URE 100	°F. 7. SHOW EXI	T GAS VELOCITY	3.92 FT/SEC.	
8. INDICATE	PERCENT OF TIME OVER	125°F	0	%.		
SHOW EXIT	GAS VOLUME FLOW RATE	.192		FT ³ /SEC @ 70°F	AND 1 ATMOS.	
o. SHOW MOIS	TURE CONTENT	O (GR./CU. FT.	DRY GAS AT 70°F) AND	0	GR./CU. FT. GAS AT CONDITION.	
1. SHOW DIST	ANCE FROM RELEASE PO	INT TO NEAREST PROPERTY L	INE 42	20	_ FEET.	
2. DIRECTION	OF GAS STREAM AS IT	LEAVES STACK	U-UP,	D D-DOWN,	H-HOR I ZONTAL	
3 AIR POLLU	TION CONTROL EQUIPMEN	NT				
		A'IR CONTAMINANT CONTROLLED	YEAR INSTALLED	TYPE ¹	EFF IC LENCY	
PARTICUL A	TE	yes	1974	001	100%	
SULFUR DIE	OXIDE			<u> </u>		
OXIDES OF	NITROGEN					
HYDROCARBO	ONS				·	
CARBON MON	NOXIDE					
CASEOUS FL	UORIDES					
-						
						

Pro	ocess Emission Sourcess IS AN EMISSION MONITORING	G AND REC	ORDING INSTR	RUMENT ATTACHED	TO THIS EMISSIC	ON POINT, YES	NO I	X	
	IF YES, DESCRIBE:								
15.	ADDITIONAL COMMENTS:								
16.	SHOW AIR CONTAMINANT DAT	A FOR THI	S EMISSION F	EMISSION POI	NT DATA				
				CONCENTRATION		AVERAGE EMISSIONS		METHOD OF	
	POLLUTANT	ABSENT	PRESENT	QUANTITY	UNITS	LBS/HR.	LBS/YEAR	MEASUREMENT	
•	DADT ICIU ATCC	1/			GRAINS/SCF AT 70° F				
	PART ICULATES	+>			PPM		 		
	SULFUR DIOXIDE	1			PPM	 			
	OXIDES OF NITROGEN	+-			PPM	 		-	
	CARBON MONOX IDE	+			PPM			-	
	GASEOUS FLUDPIDES	 	ļ		 			 	
	OTHERS (NAME CHEMICAL)	 -		0.050	12 /04 3	40	776 000	777	
	Nitrogen Methanol	 		0.058	lb./ft. ³	18.8	336,000	Flow meter Calculation	
	Methanol	 		0.021	10./10.	10.0	158,000	from vapor press. data.	
				500.05510	5.405.040.4				
				FOR OFFIC	E USE ONLY				
	PROCESS WEIGHT TABLE	APPLIES TO	THIS EMISS	ION POINT.	i				
	EMISSION POINT IS NOT	IN COMPL	HANCE WITH A	PPLICABLE PART	ICULATE REGULATI	ON. ALLOWABL	E EMISSIONS	#/ht	
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH S	ULFUR DIOXIDE	EMISSION STANDAR	RD OF 2000 PPM.			
	EMISSION POINT IS NOT	IN COMPL	IANCE WITH S	ULFUR DIOXIDE I	EMISSION STANDAR	D OF 500 PPM.	t	•	
	EMISSION POINT IS NOT	IN COMPL	ANCE WITH G	ASEOUS EMISSION	N STANDARD. IDE	INTIFY GAS		AND ALLOWABLE	
	EMISSIONS								
	EMISSION POINT IS NOT			ASEOUS EMISSION	N STANDARD. IDE	NTIFY GAS	···········	AND ALLOWABLE	
_	EMISSIONS								
METHOD OF MEASUREMENT IS ACCEPTABLE.								THE COMMENTE DE DE	
METHOD OF MEASUREMENT IS NOT ACCEPTABLE.									
~	EXPLAIN								
ALLO	WABLE EMISSIONS (TONS/YEA								
	PARTICULATES	•	SL	JLFUR DIOXIDE	***************************************	HYI	DROCARBONS	ngalap di mamadini jaming, akka yaminga pangana yangga	
		innou uou	av 105					·	
F			OXIDE		A-202				
r [[]]	FILING IS AUTHORIZED SIY DATE								

Emission Information For Eastman's Columbia South Carolina Plant

The following permit application to the State of South Carolina lists all emissions from the Columbia Plant. This source is referred to as "Process Emission Source Number B-17MO1."

SOUTH CAROLINA POLLUTION CONTROL AUTHORITY D' SION OF AIR POLLUTION CONTROL PERMIT APPLICATION

PERMIT APPLICATION
PROCESS OPERATION
SUPPLEMENTARY INFORMATION

PERMIT NO	•	
Process E Number B	mission 17M01	Source
Page 1	of	10
Edition	Α	

	NAME OF FIRM Carolina East	t ·	
2	LOCATION OF PLANT Columbia, Se	outh Carolina	
3.	BRIEF DESCRIPTION OF PROCESS	(attach flow diagram) Manulecture	0:
	Dimethyl Terephthalate		

4. PROCESS WEIGHTS:

A. Raw Materials:	(1587: e.)	B. Products:	Rate (loc/ray)
	·		

KOTE: Please indicate units on kate (lbs./hr.,etc.)

5. EMISSIONS TO ATMOSPHERE

A. Particulate:	(Indic	al Rate ate units)	Type of	Stack	Stack Inside	Stack	Stack
Haterial Emitted		/day) .Controlled	Control Device	Reight	Dia. ft or in	Temp.	Velocity ft / sec
I. Vent J Methyl Paratoluate Methyl Benzoate Tethyl-p-Formal Benzoate Dimethyl Terephthalate		7.1 7.2 0.1 2.0	Conservation Ven	(Acct) 5 93	3"	338	0.08
II. Vent K Methyl Paratoluate Methyl Benzoate		3•3 4•4	Conservation Ven	3 .7	3"	275	o.o8
III. Vent L Methyl Paratoluate Methyl Benzoate Methyl-p-Formal Benzoate Dimethyl Terephthalate		2.2 0.6 4.3 0.3	Conservation Ven	25	ħu	3 69	0.03
				,			

B. Please indicate size distribution for each particulate emission:

Stack	wt.% >60µ	wt.% 60µ-10µ	wt.% >0.5µ
I. Vent J II.Vent K III.Vent L IV. V.	5% 1%	85% 70% 69%	10% 30% 30%
VII. VIII.			A-204

Process Emission Source
Number B-17M01
Page 2 of 10
Edition A

₹ Gaseous:

_							
Gaseous Material Emitted	(Indic (lbs,	al Rate ate units) /day) Controlled	Type of Control Device	Stack Height (Feet)	Stack Inside Dia. ft or in	Stack Temp. OF	Stack Velocity ft / scc
I. <u>Vent A</u> Methyl Alcohol Methyl-1, 3-Dioxolane Methyl-1 Butanol Inert Gas		43 0.6 0.1 81	Conservation Ven	; 37	4"	104	0.23
Methyl Alcohol Inert Gas		42 71	Conservation Ven	; 37	4"	104	0.20
HI. <u>Vent C</u> Methyl Alcohol -Xylene hert Ges		3 ⁴ 0.1 58	Conservation Ven	35	4"	104	0.02
Ty. <u>Vent D</u> ethyl Alcohol thert Gas		0.6 1.0	Conservation Ven	35	3"	104	0.01
Vent E ethyl Alcohol o-Xylene mert Gas		6.8 0.01 12	Conservation Ven	23	3"	104	0.06
VI. <u>Vent F</u> Methyl Alcohol -Xylene hert Gas		6.8 0.01 12	Conservation Vent	23	3"	104	0.06
ethyl Alcohol 10-Xylene Inert Gas		14 0.01 24	Conservation Vent	23	3"	104	0.12
Methyl Alcohol -Xylene hert Gas		1 ¹ 4 0.01 2 ¹ 4.0	Conservation Vent	23	3"	104	0.12
Xylene (c.3°		28 1 71	Vent Scrubber	84	6"	131	0.16
Vent J* -Xylene Inert Gas		5.6 13	Conservation Vent	58	3"	338	0.08
			A-205				

Process Emission Source
Number B-17MO1
Page 3 of 10
Edition A

C. Gaseous:

Gaseous	(Indic	al Rate ate units)	Type of	Stack	Stack Inside	Stack	Stack
Material Emitted	(1bs Uncont	controlled	Control Device	Height (Feet)	Dia. ft or in	Temp.	Velocity ft / sec
XI. <u>Vent K*</u> o-Xylene Inert Gas		8.7 16	Conservation Ven	37	3"	275	0.09
XII. <u>Vent L</u> * Inert Ges		8.2	Conservation Ven	t 25	4"	369	0.03.
*Particulate Emission							
XIII. <u>Vent M</u> Methyl Alcohol 2-Methyl-1, 3-Dioxolane n-Butanol Inert Gas		71 0.9 0.01 220	Conservation Ven	35	6"	1 04	0.17
XIV. Vent N Dimethyl Ether Methyl Alcohol 2-Methyl-1, 3-Dioxolane o-Xylene Acetaldehyde Methyl Acetate Inert Gas		0.5 28 2.04 0.03 0.06 0.5 49	Conservation Ven	35	12"	104	0.02
XV. Vent O Methyl Acetate Methyl Alcohol 2-Methyl-1, 3-Dioxolane o-Xylene Inert Gas		0.04 2.3 0.01 0:01 45	Conservation Ven	35	71	104	0.09
AVI. Vent P Dimethyl Ether Hethyl Acetate Methyl Alcohol Acetaldehyde RBr Inert Gas		14,000 5,900 1,700 1,700 52 216	A system is being designed to introduce this stream to an incinerator system for burning instead of discharging to atmosphere				
VVII. Vent Q o-Xylene Inert Ges		2•5 34	Conservation Ven	35	8"	104	0.02
			A-206				

aseous

Number B-17MO1 Page 4 Edition of 10

Gaseous Material Emitted	(Indic	al Rate ate units) s/day) Controlled	Type of Control Device	Stack Height (Feet)	Stack Inside Dia. ft or in	Stack Temp. OF	Stack Velocity ft / sec
XVII. Vent R Methyl Alcohol Inert Ges		0.6 1.0	Conservation Ven		2"	104	0.01
XI. Vent S Methyl Alcohol Inert Gas		0.5 0.8	Conservation Ven	t 57	2"	104	0.01
Methyl Alcohol		0.1 0.2	Conservation Ven	57	2"	104	0.01
XXI. Vent U o Kylene rert Gas		0.01 2.4	Conservation Ven	32	3"	122	0.01
XMII. <u>Vent V</u> Kylene Inert Gas		0.01 2.4	Conservation Ven	32	8"	122	0.01
XXIII. Vent W Sethyl Alcohol Strogen		240 660	Vent Scriffs Conservation Vent	R 21	2"	90	6.7
·			·		,		,
				·			

-						A-207
111	emissions	comply with	state	regulations?	Yes	

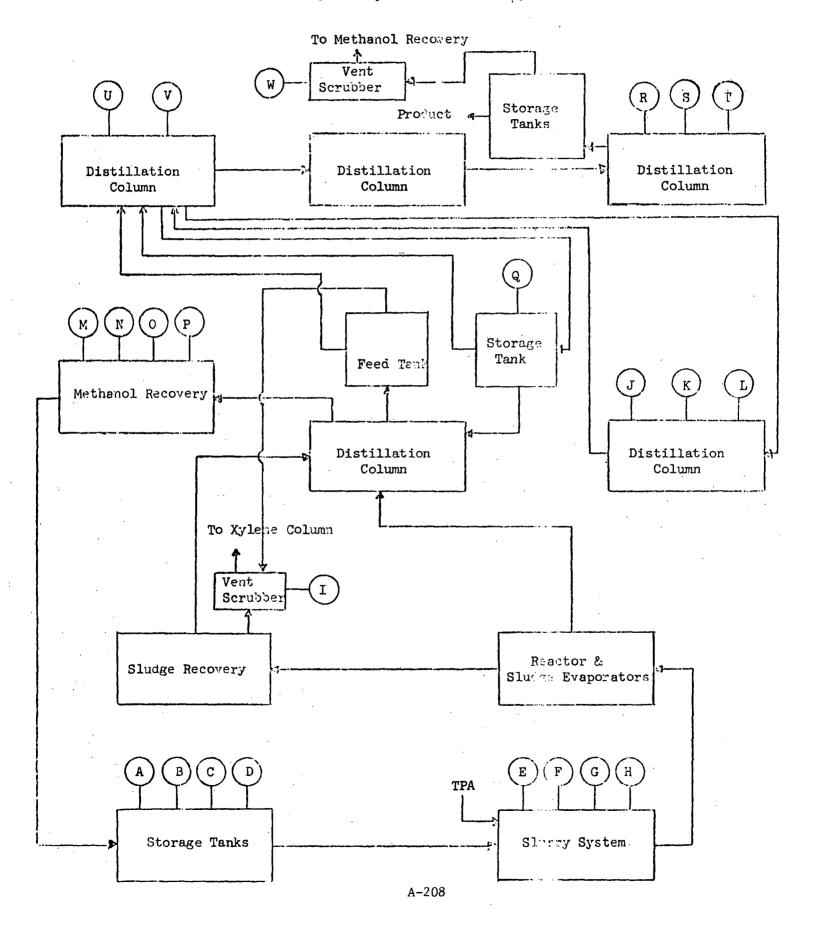
ignature of	Responsible
Person or	Company Official

19000

Manager, CEC

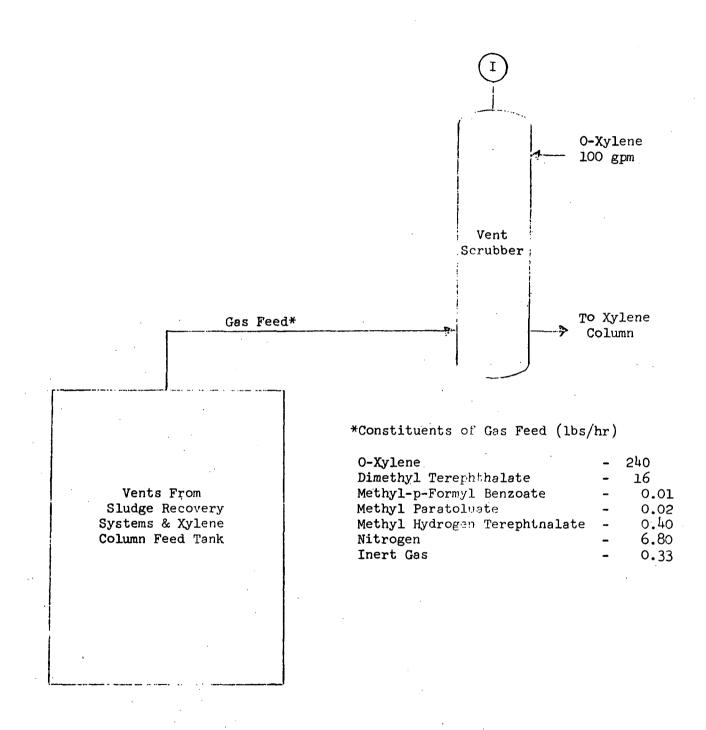
Manoer	3-11MMT	<u> </u>
Page 5	O::	10
Edition	A	

Carolina Eastman Company Dimethyl Terephthalate Flow Diagram



Page 6 of 10 Edition A

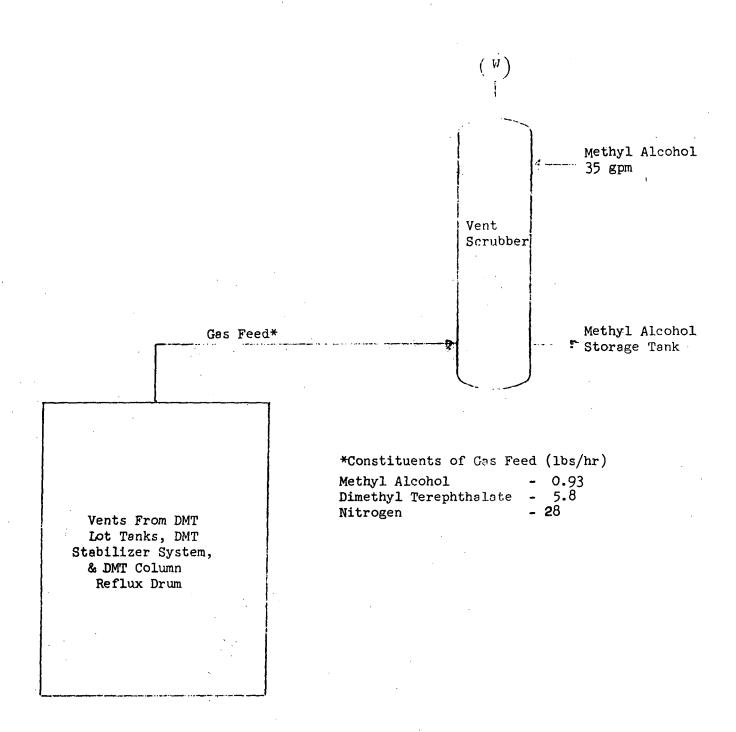
Carolina Eastman Company Dimethyl Terephthalate Manufacture



Schematic of the Proposed Sludge Recovery System & Xylene Column Feed Tank Vent Scrubber

Number B-17MO1
Page 7 of 10
Edition A

Carolina Eastman Company
Dimethyl Terephthalate Manufacture



Schematic of the Proposed DMT Lot Tank, Stabilizer System, & DMT Column Reflux Drum Vent Scrubber

REPORTS AND CORRESPONDENCE WITH CONTROL DEVICE MANUFACTURERS

The following summarizes all telephone conversations, letters and responses from air pollution control device manufacturers. The information is presented in chronological order for simplicity. This information is supplemented by the references used in Section III. Where the "Person Contacted" line is left blank, it is because the source wished to remain anonymous. A key to stream identification numbers mentioned in these conversations are contained in the letter to Mr. Brewer of Air Correction Division, UOP.

By and large the response from control device manufacturers was poor. Much information that was promised was not sent. However, from literature information and conversations with plant personnel, the best system of hydrocarbon and CO emission control appears to be a CO boiler.

TELEPHONE CONVERSATION

PERSON CONTACTED	Romuald Michalek	 DATE	3/29/76
ORGANIZATION	Englehard Industries		•
GCA PERSONNEL	Mark Bornstein		

DISCUSSION SUMMARY

Mr. Michalek was contacted about an article which recently appeared in "Pollution Eng.". Several NO $_{\rm X}$ control processes are discussed and I in quired about obtaining additional information. I was informed that additional data are not readily available; however, if I requested information for a specific waste stream, Engelhard Industries would make a recommendation concerning the type of control equipment that would be most feasible. Compositions and flow rates for several representative waste streams from the DMT-TPA were sent.

TELEPHONE CONVERSATION

PERSON CONTACTED	Jerry Brewer	DATE 5/3/76
ORGANIZATION	UOP	
GCA PERSONNEL	Mark Bornstein	

DISCUSSION SUMMARY

Air Correction was recontacted for the purpose of determining the status of their evaluation of the control systems for both adipic acid and DMT control devices. Mr. Brewer informed me that they will start working on the project this week and that GCA should receive the data in 2 or 3 weeks. (This information had not been received by the end of the task.)

Mr. Jerold Brewer

Air Correction Division UOP

Tokeneke Road

Darien, Connecticut 06820

Dear Mr. Brewer:

As per our telephone conversation on Wednesday, March 31, 1976, I am enclosing data for several streams from the processing of adipic acid and dimethylterephthalate. Physical parameters as well as any additional data or chemical makeup is being provided.

It is my understanding that you will provide me with information concerning the most practical way of controlling these streams for NO and/or hydrocarbon emissions. Methods that will be considered are: scrubbing, adsorption, catalytic reduction and thermal incineration. A brief economic evaluation, if feasible, will also be included.

I sincerely appreciate your taking the time to answer my questions on Wednesday. I am looking forward to obtaining the above system evaluation as well as any additional data that IGI might have.

Sincerely,

Mark Bourten

Mark Bornstein

B:nc Enc.

```
Stream I D
```

10-1-D

7.6%

flow rate	- 240 lbs/hr
Temp	- 78°F
Pressure	- atm

Composition ± 10%

Methyl acetate

Acetic acid3.8%Propyl acetate0.25%Acetaldchyde12.3%

Inert gas 76.05%

all gases

all gases

Stream I D - 10-2 - A

flow rate - 900 SCFM

Temp - 225° F

Pressure - 250 psig

Composition

Methyl acetate

P-xylene

MEK

1120

Acetic acid

Охудоп

 co_2

N₂

wt %

0.8

.05

.10

.08

.38

2.0

27.8

69.5

Stream I D - 10-2-E

-	24 000 000	
flow rate	- 34,000 SCFM	
Temp	- 2 85 [°] F	
Pressure	- atm	
Composition	wt %	
Acetic acid	.006	
Benzoic acid	0.614	
Paratoluic acid	0.005	
Paracarboxyl benzaldehyde	0.001	
co ₂	0.199 all g	ases
co	0.015	
н ₂ 0	98.832	
и ₂	.036	
hydrogen impurities	.29	
Stream I.D. 10-4-A		
flow rate -	50,000 SCFM	
Temp ~	95 ⁰ F	
Pressure -	5 psig	
Composition		
p-xylenc	0.5 -1.5%	
11_0	1.6 - 4.5%	
N ₂		
02	93.0 - 97.3%	all gases
co_2	<i>,</i>	
CO	0.6 - 1.0%	

TELEPHONE CONVERSATION

		•
PERSON CONTACTED	Mr. Williams	DATE 5/3/76
ORGANIZATION	Englehard Industries	· -
GCA PERSONNEL	Mark Bornstein	·
DISCUSSION SUMMAR	Y .	
Englehard Industr	ies was recontacted for t	he purpose of determining
the status of the	ir evaluation of the cont	rol systems for both adipic
acid and DMT. Mr	. Williams informed me th	at they were proceeding with
the evaluation and	d we should be receiving	the data in 2 or 3 weeks.
(This information	had not been received by	the end of the task.)
	·	
	TELEPHONE CON	IVERSATION
PERSON CONTACTED		DATE5/14/76
ORGANIZATION		
GCA PERSONNEL	R. Cass	

DISCUSSION SUMMARY

Conversation with manufacturers of carbon adsorption units for hydrocarbon control. The manufacturer was given the composition of stream 10-I-A. At the low concentration of hydrocarbons in stream 10-I-A, the manufacturer recommended the use of a pilot plant to determine removal efficiency. If each component was alone in the stream at approximately 2 percent concentration, then up to 95 percent removal efficiency could be expected. The carbon absorption unit will not affect the CO concentration. The manufacturer felt that trying to quote an efficiency on this low a concentration for this particular mixture of hydrocarbons would be a disservice to us. (This information had not been received by the end of the task.)

CA/TECHNOLOGY DIVISION



May 14, 1976

Mr. Ron Kent
Oxy-Catalyst, Inc.
East Biddle Street
West Chester, Pennsylvania 19380

Dear Mr. Kent:

I spoke to you today concerning the control of NO and NC emissions from the manufacture of adipic acid and dimethylterephthalate. I have included two typical process streams and would like the following information for your thermal oxidation, catalytic oxidation and carbon absorption units:

- a) removal efficiency of NO and HC
- b) maximum concentration of NO or HC that can be handled and the removal efficiency at maximum concentration
- c) minimum concentration of NO or NC that can be handled and the removal efficiency at minimum concentration
- d) any potential problems of poisoning the catalyst in the catalytic oxidation unit
- e) in the case of NO removal, will the presence of up to 3% cyclohexane affect the control device

I appreciate your interest and cooperation.

Sincerely,

Reed Cass

RC: nc

streams 10-1-A and 5-2-C

GCA/TECHNOLOGY DIVISION ●●▲

May 17, 1976

Mr. De Muynk American Norit Co., Inc. 6301 Glidden Way Jacksonville, Florida 32208

Dear Mr. De Muynk:

I spoke to you today concerning the control of HC emissions from the manufacture of dimethylterephthalate. I have included a typical process stream and would like the following information for an activated carbon absorption unit:

- a) removal efficiency of HC
- b) maximum concentration of HC that can be handled and the removal efficiency at maximum concentration
- c) minimum concentration of HC that can be handled and the removal efficiency at minimum concentration

I appreciate your interest and cooperation.

Sincerely,

Reed Cass

RC:nc Enc.

TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. Himmelburger		DATE _	5/24/76
ORGANIZATION	Trane-Thermal Co.			
GCA PERSONNEL	R. Cass			
DISCUSSION SUMMAR	ř			
Mr. Himmelburger	was informed of the prop	perties of str	eam I.	D., 10-1-A
and asked about the	he removal of the HC's b	y incineratio	n. He	said that
it was possible to	remove 99.9 percent of	the HC's and	that	some CO
would be removed.	He said that due to th	ne large air v	olume	flow rate
and the low concer	ntration of HC;s, it may	not be pract	ical t	o use incin-
eration. To heat	l pound of air to 1800°	F to incinera	te req	uires 180 M
Btu/hr. If the a	ir going in is preheated	l by the heate	d disc	harge from
the incineration,	fuel use may get down t	o 50 M Btu/hr	. Thi	s comes out t
approximately 130	gal/hr of fuel. If the	e heated gas f	rom th	e incinerator
can be used to ger	nerate steam for use in	the plant, it	may b	e practical.
	TELEPHONE CO	ONVERSATION		
PERSON CONTACTED			DATE	5/24/76
				
GCA PERSONNEL	R. Cass			
DISCUSSION SUMMARY	Ý	•		
	. '	*		
The following is	a conversation with a so	crubber manufa	.cturer	•
The manufacturer	was given the flow rate	and compositi	on of	stream 10-1-A
He said that the	hydrocarbons could be so	crubbed if the	right	solvent is

used. The efficiency would be related to how much a company is willing

to invest. The cost is logarithmically related to the efficiency. He

said that a high pressure stream (like 10-1-A) would be easy to scrub because of the additional driving force. A scrubber, however, would probably not be feasible on a cost basis.

TELEPHONE CONVERSATION

		the state of the s		
PERSON CONTACTED		1	DATE _	5/24/76
ORGANIZATION				
GCA PERSONNEL	R. Cass			
DISCUSSION SUMMAR	Y			
The following is	the response from a man	ufacturer of ca	atalyt	tic inciner-
ators.	·			. •
	stated that 90 percent atalytic unit and 95 pe		•	
is no potential p	roblem for poisoning th	e catalyst with	ı stre	eam 10-1-A.
The presence of H	C will reduce the fuel	needed. With	these	streams,
special gas handl	ing steps may be requir	ed as the conc	entrat	tion of CO
and HC may be abo	ve the explosive limit.			
	TELEPHONE C	CONVERSATION		
PERSON CONTACTED	Bill Kiss	1	DATE _	5/25/76
ORGANIZATION	COMBUSTION ENGINEERI	NG		
	P. Spawn			

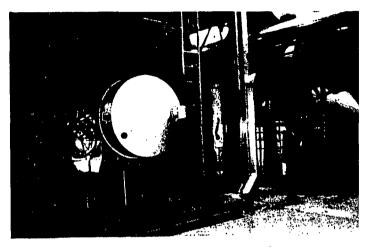
DISCUSSION SUMMARY

Mr. Kiss assured me that CE could handle removal of HC and CO in a CO boiler, but he couldn't talk to me as he only dealt with international affairs. He referred me to the Boston office of CE.

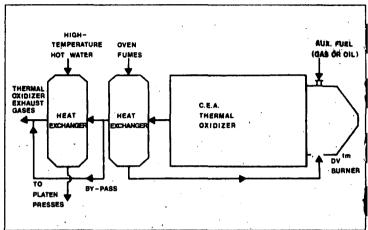
TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. Klimas		DATE	5/25/76
ORGANIZATION	Combustion Engineeri	ng, Boston		
GCA PERSONNEL	R. Spawn			
•				
DISCUSSION SUMMAR	Y			
			·	
Mr. Klimas said,	"As a rule, we don't mal	ke CO boiler	s; your	needs and
our equipment are	two different things.	We can't he	lp."	
	TELEPHONE CO	ONVERSATION		
• .				
PERSON CONTACTED	Mr. Snyder	- .	DATE _	5/26/76
ORGANIZATION	Combustion Engineering	ng/Connectio	ut	
GCA PERSONNEL	P. Spawn			
	•			•
DISCUSSION SUMMAR	Y			
	·	•		
-	d me that CE produced CO	O boilers.	Again I	was referred
to the Boston off	ice.			
				·
	TELEPHONE CO	ONVERSATION		
PERSON CONTACTED	Joe Santry		DATE	5/27/76
ORGANIZATION	Combustion Engineeri	ng/Boston		
GCA PERSONNEL	P. Spawn	·		
·.		•		
DISCUSSION SUMMAR	Υ .			
			•.	
	hat they make a CO boile	-	_	, -
	,000's of scfm). Further			
this small. He c	ouldn't think of any com	mpany that c	ould hel	Lp.

CEA Heat-Recovery Systems Reduce Cost of Burning Air Pollutants



Burner ends of two CEA thermal oxidizers which consume oven solvent fumes at Ferrozell Ges. Sachs & Co. near Munich, Germany.



Simplified schematic of CEA fume-oxidizer/heat-recovery system.

Two CEA pollution-control/heat-recovery systems utilize heat generated in burning solvent fumes to: (1) pre-heat the fumes prior to combustion, and (2) heat high-temperature hot water used to heat platen presses. This waste heat reclamation substantially reduces fume combustion costs.

Fumes from five ovens are burned in two CEA thermal oxidizers, each with accompanying heat-recovery equipment. Prior to entering an oxidizer, fumes pass through a heat exchanger where they are heated by oxidizer exhaust gases from approximately 220F to approximately 790F. By pre-heating the incoming fumes, oxidizer fuel costs are reduced roughly 52 percent.

Exhaust gases then pass through a second heat exchanger which is

tied into an existing high-temperature hot water heating system having its own hot water generator. The high-temperature hot water heats platen presses and ovens. By utilizing oxidizer exhaust gases to partially heat the hot water, generator fuel requirements were reduced some 80 percent.

Utilization of oxidizer exhaust gases to pre-heat fumes and to heat high-temperature hot water greatly reduces fuel costs, and the cost of operating the pollution-control system becomes only a fraction of what it would be otherwise.

The installation is at Ferrozell Ges. Sachs & Co. near Munich, Germany. It is patterned after two similar CEA installations in the U.S. Ferrozell manufactures industrial laminates used largely by the electronics

industry. In drying and curing resinimpregnated web material which is later formed into laminates, evaporated solvents and particulate matter are carried away in oven exhaust gases. Phenolic emissions are particularly odorous and were the cause of endless neighborhood complaints.

Since installation of the CEA system, odors have ceased and exhaust gases contain less than 50 ppm of unburned hydrocarbons and less than 2 ppm of phenol.

Each oxidizer handles up to 23,540 scfm. High-temperature hot water temperature is controlled by a sensor/damper system which regulates flow of exhaust gases through the heat exchanger and heat exchanger by-pass to maintain the high-temperature hot water at the desired temperature.



CEA COMBUSTION, INC.

61 Taylor Reed Place, Stamford, Conn. 06906 Telephone: (203) 359-1320 • Telex: 965816

SUBSIDIARY OF COMBUSTION EQUIPMENT ASSOCIATES. INC

TELEPHONE CONVERSATION

PERSON CONTACTED	??	DATE _	5/27/76
ORGANIZATION	Babcock-Wilcox		
GCA PERSONNEL _	P. Spawn		
DISCUSSION SUMMARY			
GCA staff suggeste	d contacting these people	for information	on CO boilers
or incinerators.	No one in the office, incl	Luding boiler and	l air pollu-
tion control secti	ons, nor had any informat	ion on these devi	ces.
	TELEPHONE CONVI	ERSATION	
PERSON CONTACTED _	Mr. Tom Polinski, Region	nal Mgr. DATE _	6/3/76
ORGANIZATION	CEA	,	
GCA PERSONNEL	P. Spawn		
DISCUSSION SUMMARY			
Given the followin	g waste stream:		
Q = 32,150 scf	m .		
$T = 116^{\circ} F$			
p - 1 Atm.			
Acetic Acid O. Methyl Acetate Dimethyl Ether			
CO 0.65% N ₂ 99.07%			
A thermal oxidizer	would have no problem con	mbusting > 95 per	cent of
the HC and the CO.	100 percent efficiency wo	ouldn't be achiev	red, but HC
and CO removals wo	uld approach this level.	Since the unit w	would be
operated at low ex	cess air rates, formation	of additional CO) is minimized

Since this stream is primarily inert, quantities of auxiliary fuel will be required. Thus, heat recovery is advisable via waste heat steam, hot water, or air-to-air recovery systems.

 Λ ballpark cost figure for the burner, furnace, and fuel train controls is \$70,000; this is exclusive of heat recovery systems.

APPENDIX B

LIST OF CONTACTS

MANUFACTURERS OF DMT-TPA

American Hoechst

Mr. Charles Powell (Principal contact) Hoechst Fibers Industries P.O. Box 5887 Spartanburg, S.C. 29301

Mr. Zeeler
Safety Coordinator
Hoechst Fibers Industries
Spartanburg, S.C.
201-685-2813

Mr. Coal
Environmental Manager
Hoechst Fibers Industries
Spartanburg, S.C.
201-685-2813

Mr. Robert Monihan Chief Plant Engineer Hoechst Fibers Industries P.O. Box 5887 Spartanburg, S.C. 29301 803-579-5750

Amoco

Mr. Harry Brennan (Principal contact) Coordinator of Air and Water Conservation Amoco Chemical Corp. 200 East Randolph Drive Chicago, Illinois 60601 312-856-3434 Mr. J.D. Reed Plant Manager Amoco Chemical Corp. Decatur, Alabama 203-355-2520

Mr. E.V. Smith Technical Director Amoco Chemical Corp. Joliet, Illinois 815-462-2221 Ext. 205

Dr. Robert Rosscup Patent and License Representative Amoco, Standard Oil Corp. of Indiana Chicago, Illinois 312-856-5944

DuPont

Mr. W.R. Chalker (Principal contact)
Principal Consultant, Environmental Quality
Engineering Department
E.I. DuPont de Nemours & Company, Inc.
1354 Louviers Building
Wilmington, Delaware 19898
302-366-2870

Mr. John R. Cooper
Environmental Manager
Intermediates Division, Polymer Intermediates Department
E.I. DuPont de Nemours & Company, Inc.
1007 Market Street
Wilmington, Delaware 19898
302-744-3788

Mr. Philip A. Palmer Senior Engineer, Engineering Service Division E.I. DuPont de Nemours & Company, Inc. Wilmington, Delaware 19898 302-266-3858

Tennessee Eastman

Mr. James C. Edwards (Principal contact)
Manager, Clean Environment Program
Tennessee Eastman Company
P.O. Box 511
Kingsport, Tennessee 37660
615-246-2111 Ext. 2444

Mr. W.M. Crawford Tennessee Eastman Company P.O. Box 511 Kingsport, Tennessee 37660 615-246-2111 Ext. 3401

Mr. Robert Long Licensing Manager Tennessee Eastman Company P.O. Box 511 Kingsport, Tennessee 37660 615-246-2111 Ext. 3575

Mr. Neil Simmons
Tennessee Eastman Company
P.O. Box 511
Kingsport, Tennessee 37660
615-246-2111

Hercules, Incorporated

Dr. Richard A. Chaddock (Principal contact) Environmental Coordinator Hercules, Incorporated 910 Market Street Wilmington, Delaware 19899 302-575-7625

Mr. John Humphrey Environmental Coordinator Hercules, Incorporated Wilmington, North Carolina 919-763-9841

Misc.

Mr. Marvin Fannon Bellsicol Company Beaumont, Texas 713-722-8061

Mr. Morgan Jones Environmental Officer Corporate Engineering Section Bellsicol Company Beaumont, Texas 713-722-8061 Ext. 325

STATE AIR CONTROL BOARDS

Alabama

Mr. Gene Saywell (Principal contact)
Air Pollution Control Director
Tri County District Health Service
Decatur, Alabama
205-353-7021

Mr. James W. Cooper Director, Alabama Air Pollution Control Commission Decatur, Alabama 205-832-6770

Mr. Herbert Theumer Public Health Engineer Tri County District Health Service Decatur, Alabama 205-353-7021

Mr. Seever Tri County District Health Service Air Pollution Control Program Decatur, Alabama 205-353-7021

Illinois

Mr. Marshal Monarch (Principal contact) Air Resources Analysis Section Illinois EPA Springfield, Illinois 62706 217-782-1830

Mr. Miles Zamco Acting Director, Division of Air Pollution Control Illinois EPA Springfield, Illinois 62706 217-782-7326

Mr. G.J. Reddy Superintendent, Transportation Planning Illinois EPA Springfield, Illinois 62706 217-782-5811

Mr. Deasi Permit Section, Division of Air Pollution Control Illinois EPA Springfield, Illinois 62706 217-782-3003

Mr. Joe Ancel
Director, Environmental Protection
Will County Health Department
Illinois
815-729-8495

Dr. Chester Snell
Permit Section, Division of Air Pollution Control
Illinois EPA
Springfield, Illinois
217-782-2113

Mr. Lovett Field Operations Section Illinois EPA Chicago, Illinois 312-345-9780

Mr. DuMill Clerk, Illinois Pollution Control Board Chicago, Illinois 312-793-3620 Mr. C.B. Willard Regional Manager Illinois Environmental Protection Agency 1701 First Avenue Maywood, Illinois 60153

Mr. Keith J. Conklin
Manager, Permit Section
Division of Air Pollution Control
Illinois EPA
Springfield, Illinois
217-782-2113

Dr. Richard Wadden Assistant Professor University of Illinois 312-996-8855

North Carolina

Mr. John Romans (Principal contact) Field Services Coordinator Division of Environmental Management Raleigh, North Carolina 919-829-4740

Mr. W.E. Knight
Acting Director
Division of Environmental Management
P.O. Box 27687
Raleigh, North Carolina 27611

Mr. Michael Sewell
Plans and Review Section of Permit Division
North Carolina Division of Environmental Management
Wilmington, North Carolina
919-829-4740

Mr. Andrew Carlton
Regional Engineer
North Carolina Division of Environmental Management
Wilmington, North Carolina
919-762-3394

Mr. Bill Tippit
North Carolina Division of Environmental Management
Wilmington, North Carolina
919-762-3394

South Carolina

Mr. W.G. Crosby (Principal contact)
Chief, Bureau of Air Quality Control
South Carolina Department of Health and Environmental Control
Columbia, South Carolina 29201

Tennessee

Mr. McInnis (Principal contact)
Tennessee Division of Air Pollution Control
Nashville, Tennessee
615-741-3931

Mr. John Walton Assistant Director Tennessee Division of Air Pollution Control 301 Seventh Avenue, Rm. 250 Nashville, Tennessee 37219 615-741-3931

Mr. Paul Bontrager Director, Air Pollution Control Division Metropolitan Health Department Nashville, Tennessee 615-327-9313, Ext. 293

MANUFACTURERS OF CONTROL EQUIPMENT

Mr. Jerold Brewer Air Correction Division, UOP Tokeneke Road Darien, Connecticut 06820 203-655-8711

Mr. Himmelburger Trane-Thermal Co. Brook Road Conshohocker, PA

Mr. Romuald Michalek Engelhard Industries 113 Astor Street Newark, NJ 07114 201-589-5000

Mr. Williams Engelhard Industries 2655 U.S. Route 22 Union, NJ 07083

Mr. Ron Kent Oxy-Catalyst, Inc. East Biddle Street West Chester, PA 19380

Mr. DeMuynk American Norit Co., Inc. 6301 Glidden Way Jacksonville, Florida 32208

T. Bettinger
Thermo Process Systems Group
Surface Combustion, Division of Midland-Ross Corp.
2375 Dorr Street
P.O. Box 907
Toledo, Ohio

Mr. Bill Kiss Combustion Engineering Stanford, Connecticut 203-688-1911

Mr. Klimas Combustion Engineering Boston, Massachusetts 617-426-6650 Mr. Snyder Combustion Engineering Stanford, Connecticut 203-688-1911

Mr. Joe Santry Combustion Engineering Boston, Massachusetts 617-426-6650

Mr. Tom Polinski Regional Manager CEA Combustion, Inc. Stanford, Connecticut 203-359-1320

APPENDIX C

REPORTS AND CORRESPONDENCE

INTRODUCTION

Included in this appendix are copies of all letters and telephone summaries. Correspondence with DMT-TPA manufacturers is broken down by manufacturer. Correspondence with state air pollution control agencies is categorized by state and pertinent sections of state emission regulations are included.

REPORTS AND CORRESPONDENCE WITH DMT-TPA MANUFACTURERS

Amoco Chemicals Corporation

The following contacts were made with personnel at Amoco to set up a plant visit to the Joliet Plant and to have personnel at the Decatur Plant update emission information in the Houdry questionnaire. A summary of the plant visit and information from the Decatur Plant are included in Appendix A.

TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. J.D. Reed	DATE	4/5/76
ORGANIZATION	Amoco		
GCA PERSONNEL	D.F. Durocher		

DISCUSSION SUMMARY

Mr. Reed said that he couldn't help us until we go through their corporate offices. The man I should call is Mr. Harry R. Brennan of the Chicago Office. Tel. # 312-856-3434.

TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. H. Brennan	DATE	4/5/76
ORGANIZATION	Amoco		
GCA PERSONNEL	D.F. Durocher		
	,		

DISCUSSION

I asked Mr. Brennan if we could visit the Joliet Plant and have the Decatur Plant update their questionnaire. He said that Amoco's policy used to be to help the EPA and contractors working for the EPA, but that they no longer like to do so. However, he did say to send him the cover letter and a copy of the questionnaire and he would see what he could do. His address is:

Mr. Harry Brennan Coordinator of Air and Water Conservation 200 East Randolph Drive Chicago, Illinois 60601 Mail Code 42-03

GCA/TECHNOLOGY DIVISION



April 8,1976

Mr. Harry Brennan Co-ordinator of Air and Water Conservation Amoco Chemical Corporation 200 East Randolph Drive, Mail Code 42-03 Chocago, Illinois

Dear Mr. Brennan:

As a follow up to our telephone conversation of April 2,1976, this letter is a formal request for emission information from Amoco Chemical's Decatur, Alabama dimethyl teraphthalate and teraphthalic acid (DMT-TPA) manufacturing plant and a request for a site visit to gather similar information from Amoco's Joliet, Illinois DMT-TPA plant.

GCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9,1976.

The Amoco Chemical DMT-TPA plant in Decatur, Alabama, had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA in the fall of 1972. The results were incorporated into a report titled, Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January, 1974. For your convenience, a copy of the completed questionnaire is attached. Much of the type of information that we need was supplied in this questionnaire, but the information must be updated.

GCA feels that the most efficient way to obtain this information would be if the original Houdry questionnaire for the Decatur, Alabama plant could be updated and if the GCA Project Manager (Dr. Donald Durocher) could visit the Joliet, Illinois plant to obtain similar emission information from plant personnel. I have enclosed a letter of intent stating the reasons for a plant visit and the information that would be needed. Authorization for this project can be obtained from the EPA Project Officer, Mr. Andrew Trenholm. Mr. Trenholm's address is given in the enclosed letter. If you would like, Mr. Trenholm can provide you with a formal letter of authorization from the EPA for GCA.

I am looking forward to Amoco's response to our request and would appreciate any assistance that you could give us in this matter. If you have any questions or comments, please feel free to contact either me or Mr. Trenholm.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

Enc. DFD:nc

GCA/TECHNOLOGY DIVISION OF

April 8, 1976

Amoco Chemicals Corporation Chicago, Illinois

Gentlemen:

This letter is a request for information on air emissions from Amoco's Decatur, Alabama and Joliet, Illinois DMT-TPA plants. GCA would like to obtain this information by having plant personnel at the Decatur, Alabama plant update a previous emissions questionnaire and by a site visit to the Joliet, Illinois plant.

GCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS) which are defined in Section 111 of the Clean Air Act.

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT - TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. This project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA.

The Decatur Plant of Amoco Chemical had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA by Mr. J. D. Reed, Plant Manager, in the fall of 1972. The results were incorporated into a report titled, Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January, 1974. For your convenience, a copy of the completed questionnaire is attached.

Much of the type of information that we need was supplied by this questionnaire, but the information must be updated. Also, as the Joliet, Illinois facility was not polled, similar information on this plant must be collected.

The information that we would like to obtain is summarized below:

1. The quantities and compositions of emissions from all atmospheric emission points. A block process flow diagram for the plant would be very helpful. GCA realizes that process stream data may be proprietary. In the absence of actual measurements of the atmospheric emissions, mass balance calculations would be sufficient:

2. The types of control equipment or methods of process control used by the plant to reduce atmospheric emissions. If at all possible, installation and operating costs for control equipment would be desired. The economics of control would provide basic supplemental information for determining the best system of emission reduction. Mass flow balances around the control device would be useful.

In addition, GCA must delineate all parameters affecting the mass flow rate of emissions (e.g. non-normal operating conditions, reactor vent dumps, season of the year, etc.);

(Information of the type outlined in Points 1 and 2 was contained in the Houdry Division questionnaire. Therefore, updating this information would be straightforward.)

3. Finally, as NSPS are applicable to facilities that are modified in such a way as to increase the mass rate of emissions, GCA will have to identify how DMT-TPA plants increase production rates or otherwise modernize facilities. The key point here is to quantitatively describe the effects of expansion and modernization techniques on the mass rate of emission. This last point was not covered in the Houdry Division report. However, we feel that this type of information can readily be gained in conversation with plant managers.

We are interested in the Decatur Plant because it is one of the largest producers of DMT-TPA. As the Decatur plant has increased its production capacity from 500 to over 2000 million pounds of DMT-TPA over the past four years, a study of this facility would serve as an excellent example of how DMT-TPA plants increase their output capacity and the effects of this increase on air emissions.

GCA has three options open to it in the acquisition of data for this project:

- Option 1 Only literature data can be used. This approach is unsatisfactory as there is little data available in the open literature, and that which is available is several years old. This approach includes gathering information from state and local regulatory agencies. However, as this information is often dated or unavailable, the most feasible approach is to collect the information from the producing company;
- Option 2 New industrial questionnaires, similar to the Houdry Division questionnaire and applicable under Section 114 of the Clean Air Act, can be sent out through the EPA. GCA would not like to use this approach for three reasons.
 - 1. the turn around time for a letter is long compared with the duration of the project,
 - questionnaires are not flexible and cannot easily be changed to reflect the situation,
 - 3. questionnaires are generally considered an imposition on the plant manager's time.

Option 3 - the GCA Project Manager, Dr. Donald Durocher, can visit the Joliet Plant to collect the information from plant personnel. In the case of a facility that has previously filled out a questionnaire for the Houdry Division of Air Products, it would be most efficient if the questionnaire were updated.

This is the course that GCA hopes to pursue. This option would allow for a rapid transfer of information and would insure a good understanding of the DMT-TPA plant processes and, therefore, an accurate presentation of the results.

As the duration of this project is short, an appointment to visit your plant sometime in April or early May would be quite appealing. I am looking forward to your response to this request. If you have any questions on this request, please contact me or Mr. Andrew Trenholm. Mr. Trenholm's address is below:

Mr. Andrew Trenholm
EPA-Office of Air Quality and Planning
Emission Standards and Engineering Division
Research Triangle Park - Mail Drop #13
Research Triangle Park, North Carolina 27711
Tel. 919-688-8145, Ext. 301

Thank you.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

GCA/Technology Division
Burlington Road
Bedford, Mass. 01730
Tel. 617-275-9000, Ext. 352

DFD:nc Enc.

PERSON CONTACTED	Mr. H. Brennan	DATE	<u>4/15/76</u>
ORGANIZATION	Amoco		
GCA PERSONNEL _	D.F. Durocher		

DISCUSSION SUMMARY

Both the Joliet and Decatur Plants are not going to make DMT anymore, but are concentrating on TPA production. Their foreign plants will be making DMT. He has told all customers that DMT production will be stopping in the near future.

The Decatur Plant will update the questionnaire and send it back to us. I asked him if they could send it back by May 1. He said he'd try.

We should visit the Joliet Plant. I should contact

Jean Smith Technical Director Joliet Plant 815-462-2221 Ext. 205

They will update all the information contained in the Houdry report. Also, they will give us a block flow diagram, total capacity, but not production figures and tell us in general how much production there is. He will supply all emission information. There were questions in the Illinois questionnaire that could be used to calculate yields, and that is why the questionnaire is confidential. They specifically instructed the Illinois APC Board not to give out confidential information or any information if they don't need to.

We will be able to get the efficiency of control equipment. He said there haven't been many changes in the plant since 1972.

PERSON CONTACTED Mr. E.V. Smith DATE 4/15/76
ORGANIZATION Amoco
GCA PERSONNEL D.F. Durocher
DISCUSSION SUMMARY
Mr. Smith said that he will supply us with a block flow diagram. Emission information will be taken from permits. They are not up-to-date, but the emissions haven't changed.
Will be expecting a visit at 9:00 a.m. on April 27th. Directions were given.
TELEPHONE CONVERSATION
PERSON CONTACTED Mr. H. Brennan DATE 4/20/76
ORGANIZATION Amoco
GCA PERSONNEL D.F. Durocher
DISCUSSION SUMMARY
Mr. Brennan noted that the Houdry report didn't cover the TPA purification.
He wanted to know if I wanted information from this part of the process.
I said that I did. He would send it with the report from the Decatur
Plant. Also, the people at Joliet Plant will be calling to see if we want similar information.

He said that he will be at the Joliet Plant when I visit it.

PERSON CONTACTED Mr. H. Brennan DATE 4/13/76
ORGANIZATION Amoco
GCA PERSONNEL D.F. Durocher
DISCUSSION SUMMARY
Mr. Brennan said that he had compiled all data on emissions from the Alabama Plant and had sent it down to Alabama for verification. However, they had been doing debottlenecking and the data was not up to date. They are now bringing the information up to date and will send us the new data in 2 weeks. I told him about our trip to DuPont and the fact that we need Rosscup's permission to get the DuPont data. He said that Rosscup had OK'd the Houdry report data and had also given him the OK to give us the informa-
tion from the Joliet Plant and the Decatur Plant.
TELEPHONE CONVERSATION
PERSON CONTACTED Dr. Robert Rosscup DATE 5/17/76 ORGANIZATION Amoco
GCA PERSONNEL D.F. Durocher
DISCUSSION SUMMARY
I told Dr. Rosscup our problem. He said that he saw no problem with getting data. Art Gilbert from the Patents and Licensing Department of DuPont had already been in contact with him to tell him I might be calling. Dr. Rosscup' address is 200 East Randolph Drive, 60601, Mail Code 1906.
He said to contact our man in DuPont, John Cooper and have him contact

Art Gilbert and he would set everything up over phone with Dr. Rosscup.

He saw no problem. Suitable arrangements will be made through him. However, I should send Dr. Rosscup a letter and mention our conversation with him and point out that the information that we want is not confidential and that we have received the same information from Harry Brennan at Amoco. We should also point out the information that we want. He said that he will OK our information requests.

E.I. DuPont de Nemours

The following contacts were made with personnel at DuPont to arrange a meeting to gather emissions information. A summary of the meeting is included in Appendix A.

TELEPHONE CONVERSATION

PERSON CONTACTE	ED <u>Mr. W.R. Chalker</u>	DATE	3/25/76
ORGANIZATION _	E.I. DuPont de Nemours		
GCA PERSONNEL	D.F. Durocher		

DISCUSSION SUMMARY

Mr. Chalker said that we would have to go through channels to gain any kind of information. He did say that a site visit, especially since time is limited would be the best bet. The best approach for this is to write him a letter summarizing what we need to know and the time schedule involved. This will speed things up as he will be able to show this directly to all concerned parties; especially the Wilmington Office, which must clear all information and be disseminated.

Mr. Chalker can't give us permission to visit the plant. This will have to come from the Wilmington Office. Letter should explicitly state what we hope to accomplish and the information that we seek. The fact that NSPS are going to be set should be stressed, as it will drive home the urgency of the matter, and validate the request for information. This letter should be sent out immediately. We should also state why a personal visit is requested. Everything should be explicitly spelled out but should also be concise.

Mr. Chalker also suggested that we contact state agencies to determine what new equipment may have been installed in these plants (at least where a permit is required). He didn't see a need to contact the Project Officer at this time.

PERSON CONTACTED Mr. W.R. Chalker DATE 4/5/76
ORGANIZATION E.I. DuPont de Nemours
GCA PERSONNEL D. F. Durocher
DISCUSSION SUMMARY
Mr. Chalker had received our request for a visit to the adipic acid plants, but he hadn't yet had a chance to act on it. He said that he would start it through channels, tomorrow at the latest.
He said that I should send him a similar letter and questionnaire for a
visit to the DMT-TPA Plant. He did, however, mention that we are asking
for a lot of information, and he didn't know how much we would be able
to obtain.
TELEPHONE CONVERSATION
PERSON CONTACTED Mr. W. R. Chalker DATE 4/15/76
ORGANIZATION E.I. DuPont de Nemours
GCA PERSONNEL D.F. Durocher
DISCUSSION SUMMARY
One problem is that they are leasing technology from Amoco and Eastman.
Dr. Cooper of their department (Departmental Pollution Coordinator) has
filed a report with their legal staff to see where they stand. We will
certainly be able to get the information that was in the Houdry report,
but they are not sure what information we would be able to get from the
plant managers on anything else. If there are any problems he will call
us.

can check to see what is being given out.

He would also like me to bring the information from Texas, just so they

April 9, 1976

Mr. W. R. Chalker Principal Consultant, Environmental Quality E.T. DuPont de Nemours & Company, Inc. 1354 Louviers Building Wilmington, Delaware 19898

Dear Mr. Chalker:

GCA/Technology Division is under contract to the EPA to update basic background information on dimethyl teraphthalate and teraphthalic acid (DMT-TPA) manufacturing plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9, 1976.

The defunct DMT-TPA plant in Old Hickory, Tennessee, had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnairs was returned to the EPA on September 7,1972. The results were incorporated into a report titled, Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January, 1974. For your convenience, a copy of the completed questionnaire is attached. Much of the type of information that we need from the Wilmington, North Carolina plant is contained in this questionnaire.

As part of this study, I would like to visit and gather information from the personnel at the Wilmington, North Carolina plant. I have enclosed a letter stating the reasons for a plant visit and the information that would be needed.

Tam looking forward to DuPont's response to our request and would appreciate any assistance that you could give us in this matter. If you have any questions or comments, please feel free to contact either me or the EPA Project Officer, Mr. Andrew Teenholm. Mr. Trenholm's address is in the enclosed letter.

Sincerely,

Enc. DFD:nc Dr. Donald F. Durocher Schior Scientist

GCA/TECHNOLOGY DIVISION .

April 9, 1976

E.I. DuPout de Nemours & Company, Inc. Wilmington, Deleware

Gentlemen:

This letter is a request to visit DuPont's DMT-TPA plant in Wilmington, North Carolina. The purpose of this visit will be to gather information on atmospheric emissions, emission control systems, and methods employed to expand a DMT-TPA plant's output capacity.

CCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS) which are defined in Section 111 of the Clean Air Act.

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Directly Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. This project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA.

The information that we would like to obtain is summarized below:

- 1. The types of control equipment or methods of process control used by the plant to reduce atmospheric emissions. If at all possible, installation and operating costs for control equipment would be desired. The economics of control would provide basis supplemental information for determining the bast system of emission reduction. Mass flow balances around the control device would be useful information.
- 2. The quantities and compositions of emissions from all atmospheric emission points. A process flow diagram for the plant would be very helpful. GCA realizes that process stream data may be proprietary. In the absence of actual measurements of the atmospheric emissions, mass balance calculations would be sufficient; In addition, GCA must delineate all parameters affecting the mass flow rate of emissions (e.g. non-normal operating conditions, reactor vent dumps, scason of the year, etc.);
- 3. Finally, as NSPS are applicable to facilities that are modified in such away as to increase the mass rate of emissions, GCA will have to identify how DMT-TPA plants increase production rates or otherwise modernize facilities. The key point here is to

quantitatively describe the effects of expansion and modernization techniques on the mass rate of emission. We feel that this type of information can readily be gained in conversation with plant managers.

GCA has three options open to it in the acquisition of data for this project:

- Option 1 Only literature data can be used. This approach is unsatisfactory as there is little data available in the open literature, and that which is available is several years old;
- Option 2 Industrial questionnaires applicable under Section 114 of the Clean Air Act, can be sent out through the EPA. GCA would not like to use this approach for three reasons:
 - 1. the turn around time for a letter is long compared with the duration of the project,
 - 2. questionnaires are not flexible and cannot easily be changed to reflect the situation.
 - 3. questionnaires are generally considered an imposition on the plant manager's time.
- Option 3 the GCA Project Manager, Dr. Donald Durocher, can visit the DMT-TPA plant to collect the information from plant personnel. This is the course that GCA hopes to pursue. This option would allow for a rapid transfer of information and would insure a good understanding of the DMT-TPA plant processes and, therefore, an accurate presentation of the results.

As the duration of this project is short, an appointment to visit your plant sometime in April or early May would be quite appealing. I am looking forward to your response to this request. If you have any questions on this request, please contact me or Mr. Andrew Trenholm. Mr. Trenholm's address is below:

Mr. Andrew Trenholm
EPA - Office of Air Quality and Planning
Emission Standards and Engineering Division
Research Triangle Park - Mail Drop #13
Research Triangle Park, North Carolina 27711
Tel. 919-688-8146, Ext. 301

Thank you.

Sincerely,

Dr. Donald F. Durocher Senior Scientist GCA/Technology Division Burlington Road Bedford, Mass. 01730

Tel. 617-275-9000, Ext. 352

DFD:nc



E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

ENGINEERING DEPARTMENT LOUVIERS BUILDING

April 15, 1976

Dr. Donald F. Durocher GCA/Technology Division Burlington Road Bedford. MA 01730

Dear Don:

Confirming our conversation today, we will expect your visit to Wilmington on May 18, 1976, at 9:00 am in Room D-1100 (second floor of the Du Pont Building). This is located in center city adjacent to the Hotel Du Pont. The easiest access would be the entrance on Orange Street between Tenth and Eleventh Streets. If you were delayed, the phone to this Room is 774-8765.

We will discuss updating the Houdry report on adipic acid plant air emissions relative to your contract with EPA. At that time or before, we can let you know our position on your request for information on the DMT/TPA processes which I pointed out we are a licensee.

Undoubtedly, the subject of confidentiality will come up and how this is covered in your contract with EPA. It might be of value to have a copy available. You mentioned that you had received from the Texas Air Control Board permit applications for Du Pont adipic acid operations. We would be highly interested in seeing copy of what TACB furnished you. With other EPA contractors, to whom we have furnished information, we have had an opportunity to review their draft reports. This has proven of benefit to both parties. I hope we would have this opportunity in your studies also.

If I can be of further help, please call me on (302) 366-2870.

Sincerely,

W. R. Chalker

Principal Consultant

Environmental Engineering

WRC:kmt

PERSON CONTACTED	Mr. B. Chalker		DATE	4/21/76
ORGANIZATION	DuPont			
GCA PERSONNEL _D.	F. Durocher			
DISCUSSION SUMMARY	·			
Bill said meeting the people will be there, but he will	out for a meetin	g that day anyway.	Bill	will not be
I explained our da I wish no confident calculation and I for him to look ove DMT-TPA plants, as Eastman. However, can get around it.	tial information. told him that I w er. He still see they lease their	He was interested ould send him a constant of the send him a constant of the send of the s	ed in the ppy of with a moco an	ne Model IV this model the data from nd Tennessee
	TELEPH	ONE CONVERSATION	٠.	
PERSON CONTACTED M	r. John R. Cooper		DATE	5/19/76
ORGANIZATION Du	Pont			
GCA PERSONNEL D.F DISCUSSION SUMMARY	. Durocher			
I told Mr. Cooper contact Art Gilber that they would take a copy of my letter letter to Mr. Long	t at DuPont to se ke it from there. r to Art Gilbert.	t everything up. He said that the I also told him	Mr. Coo y had a that I	oper said already sent had sent a
				

(The emission information had not been received by the end of the task.)

GCA/TECHNOLOGY DIVISION



May 14, 1976

Mr. John R. Cooper, Environmental Manager
 Intermediates Division, Polymer Intermediates Department
E.I. DuPont de Nemours & Company, Inc.
1007 Market Street
Wilmington, Delaware 19898

Dear Bill:

I enjoyed our meeting on Wednesday and am looking forward to the emission information on the Victoria Plant.

I have been unsuccessful in reaching both Dr. Rosscup and Mr. Long. In any event, a summary of the information we would like to obtain from DuPont's Wilmington, N.C. DMT-TPA plant is listed below:

- a block process flow diamgram of the DMT-TPA facility;
- the quantity and composition of all air emissions from the terephthalic acid unit;
- the quantity and composition of all air emissions from the purified terephthalic acid unit. Air emissions from the hot oil furnace are not required;
- the quantity and composition of all air emissions from the purified DMT unit;
- the means by which the above data was determined (i.e. design estimate, materials balance, actual sampling and analysis);
- the efficiency and design characteristics of all emission control devices.

Any assistance that you can give us in gathering this information will be greatly appreciated. I will be in touch after contacting Dr. Rosscup and Mr. Long.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

DFD:nc



E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

POLYMER INTERMEDIATES DEPARTMENT

June 18, 1976

Dr. Donald F. Durocher Senior Scientist GCA/Technology Division Burlington Road Bedford, Massachusetts 01730

Dear Dr. Durocher:

Request for Air Emissions Data
Adipic Acid

Re: Letter Durocher to Cooper May 18, 1976 Letter Durocher to Cooper May 14, 1976

Attached is the information requested on the Orange, Texas cyclohexane oxidation plant. Also attached are the pages you were lacking from the 1973 adipic acid inventory report for Victoria. Information on the Victoria cyclohexane oxidation plant is currently not available.

Information requested on our TPA and DMT plants has not been received from our plants to date. Will forward upon receipt.

E. I. du Pont de Nemours & Co. Polymer Intermediates Department

D. F. Rapp

Departmental Engineer's Office

DFR/smh Enclosure

Hercules

The following contacts were made with personnel at Hercules to obtain emission information. A summary of a discussion held at the Hercules main office in Wilmington, Delaware is given in Appendix A.

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. John Humphrey	DATE _	4/2/76	
ORGANIZATION Hercules Incorporated			
GCA PERSONNEL D.F. Durocher			
DISCUSSION SUMMARY			

F. T. Parkinson is no longer the plant manager. Mr. Humphrey acts as the environmental coordinator for the plant.

Mr. Humphrey said that the best way to proceed would be to send a cover letter to either the Director of Operations, the Plant Manager, or the Environmental Coordinator. Finally, he said to send the cover letter, letter of intent and a copy of the Houdry questionnaire to:

Dr. Richard A. Chaddock Environmental Coordinator Hercules Incorporated 910 Market Street Wilmington, Delaware 19899

This would be the most direct route and probably the most efficient.

Only the Wilmington Plant is presently operating. The steam boilers are fired with No. 6 fuel oil. North Carolina recently modified all of their regulations to conform to the Federal Regulations. They just issued a FPDES permit to Wilmington.

All new equipment goes through a permit application stage. This has to be renewed every 3 to 5 years. It is periodically updated.

GCA/TECHNOLOGY DIVISION



April 5, 1976

Dr. Richard A. Chaddock Environmental Co-ordinator 910 Market Street Hercules, Incorporated Wilmington, Delaware 19899

Dear Dr. Chaddock:

GCA/Technology Division is under contract to the EPA to update basic background information on dimethyl teraphthalate and teraphthalic acid (DMT-TPA) manufacturing plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9, 1976.

The Hanover Plant in Wilmington, North Carolina had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA on September 7, 1972. The results were incorporated into a report titled, "Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January, 1974. For your convenience, a copy of the completed questionnaire is attached. Much of the type of information that we need was supplied by this questionnaire, but the information must be updated.

As part of this study, I would like to visit and gather information from the personnel at the Hanover plant. In a telephone conversation on April 2, 1976, Mr. John Humphrey, Environmental Co-ordinator of the Hanover Plant, said that I should discuss this with you. I have enclosed a letter stating the reasons for a plant visit and the information that would be needed. I will be contacting you at the end of the week to further explain the goals of this project.

I am looking forward to Hercules' response to our request and would appreciate any assistance that you could give us in this matter. If you have any questions or comments, please feel free to contact either me or the EPA Project Officer, Mr. Andrew Trenholm. Mr. Trenholm's address is in the enclosed letter.

Sincerely,

Dr. Donald F. Durocher

Dr. Dandd & Durcher

Senior Scientist

DFD:nc Enc.

GCA/TECHNOLOGY DIVISION



April 5, 1976

Hercules, Incorporated Wilmington, Delaware

Gentlemen:

This letter is a request to visit Hercules' DMT-TPA plant in Wilmington, North Carolina. The purpose of this visit will be to gather information on atmospheric emissions, emission control systems, and methods employed to expand a DMT-TPA plant's output capacity.

GCA/Technology is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS) which are defined in Section 111 of the Clean Air Act.

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from adipic acid plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. This project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA.

The Hanover Plant of Hercules, Inc. in Wilmington, North Carolina, had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA by Mr. F.T. Parkinson, Plant Manager, on September 7, 1972. The results were incorporated into a report titled, "Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published Jan., 1974. For your convenience, a copy of the completed questionnaire is attached.

Much of the type of information that we need was supplied by this questionnaire, but the information must be updated. The information that we would like to obtain is summarized below:

- The quantities and compositions of emissions from all atmospheric emission points. A process flow diagram for the plant would be very helpful. GCA realizes that process stream data may be proprietary. In the absence of actual measurements of the atmospheric emissions, mass balance calculations would be sufficient;
- 2. The types of control equipment or methods of process control used by the plant to reduce atmospheric emissions. If at all possible, installation and operating costs for control equipment would be desired. The economics of control would provide basic supplemental information for determining the best system of emission reduction. Mass flow balances around the control device would be useful information.

In addition, GCA must delineate all parameters affecting the mass flow rate of emissions (e.g. non-normal operating conditions, reactor vent dumps, season of the year, etc.);

(Information of the type outlined in Points 1 and 2 was contained in the Houdry Division questionnaire). Therefore, updating this information would be straightforward)

3. Finally, as NSPS are applicable to facilities that are modified in such a way as to increase the mass rate of emissions, GCA will have to identify how DMT-TPA plants increase production rates or otherwise modernize facilities. The key point here is to quantitatively describe the effects of expansion and modernization techniques on the mass rate of emission. This last point was not covered in the Houdry Division Report. However, we feel that this type of information can readily be gained in conversation with plant managers.

We are interested in the Hanover Plant because it is one of the largest producers of DMT-TPA. As the Hanover plant has increased its production capacity from 450 to over 130C million pounds of DMT-TPA over the past four years, a study of this facility would serve as an excellent example of how DMT-TPA plants increase their output capacity and the effects of this increase on air emissions.

GCA has three options open to it in the acquisition of data for this project:

- Option 1 Only literature data can be used. This approach is unsatisfactory as there is little data available in the open literature, and that which is available is several years old;
- Option 2 Industrial questionnaires, similar to the Houdry Division questionnaire and applicable under Section 114 of the Clean Air Act, can be sent out through the EPA. GCA would not like to use this approach for three reasons:
 - 1. the turn around time for a letter is long compared with the duration of the project,
 - 2. questionnaires are not flexible and cannot easily be changed to reflect the situation,
 - 3. questionnaires are generally considered an imposition on the plant manager's time.
- Option 3 the GCA Project Manager, Dr. Donald Durocher, can visit the Hanover Plant to collect the information from plant personnel. This is the course that GCA hopes to pursue. This option would allow for a rapid transfer of information and would insure a good understanding of the Hanover Plant processes and, therefore, an accurate presentation of the results.

As the duration of this project is short, an appointment to visit your plant sometime in April or early May would be quite appealing. I am looking forward to your response to this request. If you have any questions on this request, please contact me or Mr. Andrew Trenholm. Mr. Trenholm's address is below:

Mr. Andrew Trenholm
EPA-Office of Air Quality and Planning
Emission Standards and Engineering Division
Research Triangle Park - Mail Drop #13
Research Triangle Park, North Carolina 27711

Tel. 919-688-8145, Ext. 301

Thank you.

Sincerely,

Dr. Donald F. Durocher

GCA/Technology Division Burlington Road Bedford, Mass. 01730

Senior Scientist

Tel. 617-275-9000, Ext. 352

DFD:nc Enc.

PERSON CONTACTED Dr. R. Chaddock DATE 4/20/76	<u>,</u>
ORGANIZATION Hercules Incorporated	
GCA PERSONNEL D.F. Durocher	
DISCUSSION SUMMARY	
Dr. Chaddock was on vacation for 2 weeks and will be back on the 4th of May. Then he will be going on business trips for the next severadays.	
I spoke to his secretary, Pat Kougan. She found my letter and will	
contact Dr. Chaddock. He will call me by phone to set up a plant vi	sit.
TELEPHONE CONVERSATION	•
PERSON CONTACTED Dr. R. Chaddock DATE 4/21/76	<u>,</u>
ORGANIZATION Hercules Incorporated	
GCA PERSONNEL D.F. Durocher	
DISCUSSION SUMMARY	
Pat Kougan talked to Dr. Chaddock. He will only be available from to 16th of May on. He suggested that I visit him at the main offices, plant site visits are being discouraged because there are so many contractors asking for data.	as ·
I asked Pat to inform me if he wouldn't give me air emission data or	ı
my visit. She said that all that data is stored at the main building	
and we would probably get it.	

Trip has been set up for 8:30 on May 17.

Hoechst Fibers Corporation

The following contacts were made with personnel at Hoechst Fibers to arrange a meeting to gather emission information from the Spartanburg Plant. As Hoechst Fibers decided that all emission data is confidential, this meeting was never held.

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. Zeeler	DATE _	4/8/76
ORGANIZATION American Hoechst		•
GCA PERSONNEL D.F. Durocher		
DISCUSSION SUMMARY		
Mr. Zeeler was not available. I explained what tary. She said she would have Mr. Zeeler call m		his secre-
TELEPHONE CONVERSAT	lon.	
PERSONE CONTACTED Mr. Zeeler	DATE _	4/29/76
ORGANIZATION American Hoechst	•	
GCA PERSONNEL D.F. Durocher		•
DISCUSSION SUMMARY		
Mr. Zeeler switched me to Mr. Coal.		
Mr. Coal is the environmental manager for the wh	nole company.	I explained
our project to him and he said that we could get	all this da	ta from the
plant. He said to contact	•	

Mr. Bob Monihan Chief Engineer P.O. Box 5887 Spartanburg, S.C. 29301 He said that they should give us all information. He also said that a letter of intent should be directed to Mr. Monihan.

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. Charles Powell	DATE	4/30/76
ORGANIZATION Hoechst Fibers Corporation		
GCA PERSONNEL D.F. Durocher		
DISCUSSION SUMMARY		

The reason for the confidentiality of the Houdry report was because the process was leased from Hercules. They are not at liberty to release any information.

There have been no major changes since the Houdry report. They are a small outfit and are slightly below economical size.

They are getting together information on air emissions for the state. It would be best if I visited them to collect the information in the latter part of May. Therefore, I should send him a cover letter and letter of intent and call back in 2 weeks. Should state in letter that this is the most efficient way to do this. Send letter to:

Hoechst Fibers Industries Attn: Mr. Charles L. Powell P.O. Box 5887 Spartanburg, S.C. 29301



30 April 1976

Mr. C. L. Powell Hoechst Fibers Industries P. O. Box 5887 Spartanburg, South Carolina 29301

Dear Mr. Powell:

GCA/Technology Division is under contract to the EPA to update basic background information on atmospheric emissions and emission control equipment from dimethyl terephthalate and terephthalic acid (DMT-TPA) manufacturing plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Terephthalate and Terephthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9, 1976.

As part of this study, I would like to visit and gather information from the personnel at the Spartanburg, South Carolina plant. I have enclosed a letter of intent stating the reasons for a plant visit and the information that would be needed.

I am looking forward to your response to our request and would appreciate any assistance that you could give us in this matter. If you have any questions or comments, please feel free to contact either me or the EPA Project Officer, Mr. Andrew Trenholm. Mr. Trenholm's address is in the enclosed letter.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

DFD: jaf Enclosure

30 April 1976

Hoechst Fibers International
Spartanburg, South Carolina 29301

Gentlemen:

This letter is a request to visit Hoechst's DMT-TPA plant in Spartanburg, South Carolina. The purpose of this visit will be to gather information on atmospheric emissions, emission control systems, and methods employed to expand a DMT-TPA plant's output capacity.

GCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS) which are defined in Section 111 of the Clean Air Act.

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Terephthalate and Terephthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. This project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA.

The information that we would like to obtain is summarized below:

- Design, operating and emission information for control systems used by the plant to reduce atmospheric emissions. If at all possible, installation and operating costs for control equipment would be desired. The economics of control would provide basic supplemental information for determining the best system of emission reduction. Mass flow balances around the control device would be useful information.
- 2. The quantities and compositions of emissions from all atmospheric emission points. We are concerned with emissions from the total process; i.e., from the storage of p-xylene to the storage of the purified DMT or TPA product. A block process flow diagram for the plant would be very helpful. GCA realizes that process stream data may be proprietary. In the absence of actual measurements of the atmospheric emissions, mass balance calculations would be sufficient.

In addition, GCA must delineate all parameters affecting the mass flow rate of emissions (e.g., non-normal operating conditions, reactor vent dumps, season of the year, etc.).

3. Finally, as NSPS are applicable to facilities that are modified in such a way as to increase the mass rate of emissions, GCA will have to identify how DMT-TPA plants increase production rates or otherwise modernize facilities. The key point here is to quantitatively describe the effects of expansion and modernization techniques on the mass rate of emission. We feel that this type of information can readily be gained in conversation with plant managers.

GCA has three options open to it in the acquisition of data for this project:

- Option 1 Only literature data can be used. This approach is unsatisfactory as there is little data available in the open literature, and that which is available is several years old.
- Option 2 Industrial questionnaires applicable under Section 114 of the Clean Air Act, can be sent out through the EPA. GCA would not like to use this approach for three reasons:
 - 1. the turn around time for a letter is long compared with the duration of the project,
 - 2. questionnaires are not flexible and cannot easily be changed to reflect the situation,
 - 3. questionnaires are generally considered an imposition on the plant manager's time.

Option 3 — The GCA Project Manager, Dr. Donald Durocher, can visit the DMT-TPA plant to collect the information from plant personnel. This is the course that GCA hopes to pursue. This option would allow for a rapid transfer of information and would ensure a good understanding of the DMT-TPA plant processes and, therefore, an accurate presentation of the results.

As the duration of this project is short, an appointment to visit your plant sometime in late May would be quite appealing. I am looking forward to your response to this request. If you have any questions on this request, please contact me or Mr. Andrew Trenholm. Mr. Trenholm's address is below:

Mr. Andrew Trenholm
EPA - Office of Air Quality and Planning
Emission Standards and Engineering Division
Research Triangle Park - Mail Drop #13
Research Triangle Park, North Carolina 27711

Telephone: 919-688-8146, Extension 301.

Thank you.

Sincerely,

Dr. Donald F. Durocher Senior Scientist GCA/Technology Division Burlington Road Bedford, Mass. 01730

Telephone: 617-275-9000, Ext. 352

DFD: jaf

PERSON CONTACTED Mr. Charles Powell	DATE5/14/76
ORGANIZATION Hoechst Fibers Corporation	
GCA PERSONNELD.F. Durocher	
DISCUSSION SUMMARY	
Mr. Powell had shown the letter of intent t	
waiting for the official go-ahead from the	ir main office. He thinks
everything should be all right and he will	contact me when he gets
official notification.	
	•
TELEPHONE CONV	VERSATION
PERSON CONTACTED Mr. Charles Powell	DATE
ORGANIZATION Hoechst Fibers Corporation	
GCA PERSONNEL D.F. Durocher	
DISCUSSION SUMMARY	

Charles called and said that the corporate offices came to the conclusion that since Hercules didn't allow us to see their facility they couldn't allow us to see Hoechst Fibers facility. I told him that I would see Hercules' old data and scale it down for Hoechst. He said nothing so I assumed he didn't have any better suggestions.



May 26, 1976

Dr. Donald F. Durocher Senior Scientist GCA/Technology Division Burlington Road Bedford, Mass. 01730

Dear Dr. Durocher:

Regarding your request to visit our plant to gather information on air emissions from the DMT manufacturing process, we regret that a visit cannot be permitted because of our contract agreement with Hercules.

Very truly yours,

C. L. Powell

HOECHST FIBERS INDUSTRIES
R. T. Monaghan, Chief Engineer

C. L. Powell

Environmental Engineer

CLP/msp

Mobil Chemical Company

The following contacts were made with Mobil to determine if they were still making DMT-TPA. Mobil no longer makes DMT-TPA.

TELEPHONE CONVERSATION

	,
PERSON CONTACTED Mr. Brenner	DATE 4/2/76
ORGANIZATION Mobil Chemical	· · · · · · · · · · · · · · · · · · ·
GCA PERSONNEL D.F. Durocher	-
DISCUSSION SUMMARY	
Mr. Brenner, who signed the Houdry questionow.	onnaire is stationed in Housto
Spoke to Pat Gilley, Secretary to Mr. Huff	, the head of olefins and
aromatics plant. She said Mobil sold all	interest in DMT-TPA produc-
tion to Bellsicol. Didn't know if this wa	ıs a subsidiary of any large
company. They do product DMT. Should get	in touch with Marvin Fannin,
head of the plant.	·
TELEPHONE CON	VVERSATION
PERSON CONTACTED Mr. Morgan Jones	DATE
ORGANIZATION Bellsicol	
GCA PERSONNEL D.F. Durocher	
DISCUSSION SUMMARY	•
Mr. Jones wasn't in so I spoke to Scott Me	rchant. He said that they
converted the facilities bought from Mobil	to other products and that

C-35

they do not make any DMT-TPA. This was confirmed by Paul Kelly,

Process Engineer for the plant.

PERSON CONTACTED	Mr. M. Fannin	DATE _	4/2/76	
ORGANIZATION	Bellsicol			
GCA PERSONNEL	D.F. Durocher			

DISCUSSION SUMMARY

Mr. Fannin was out of town for a few days. I spoke to his secretary and she told me that Mr. Gene Wiggin was the manufacturing manager for the plant. The Bellsicol Company is a subsidiary of Northwest Industries. They do make DMT, but done't make any TPA.

She said that it would be best to try to contact Mr. Morgan Jones, Environmental Officer, Corporate Engineering Section. His extension is 325.

Tennessee Eastman Company

The following contacts were made with personnel at Tennessee Eastman to set up a plant visit to the Kingsport Plant. A summary of the plant visit is given in Appendix A.

TELEPHONE CONVERSATION

PERSON CONTACTE	ED Mr. J. C. Edwards	DATE _	4/2/76
ORGANIZATION	Tennessee Eastman		
GCA PERSONNEL _	D.F. Durocher		

DISCUSSION SUMMARY

Our program of attack sounded all right to Mr. Edwards. However, he will need explicit authorization from the EPA. It will be all right for us to enclose the Project Officer's name and then have Edwards call him.

Mr. Edwards suggested that it would be easier to get emission data from a questionnaire update, but that since we wanted to know how plants expand, perhaps a site visit would be better. He said to enclose a copy of the questionnaire in the letter of intent.

In addition, he said that DMT production and emissions depends on the technology used, and the location of the plant (city versus rural). Emissions are always governed by state regulations. We should put in the letter that he should direct his responses to me.

TECHNOLOGY DIVISION



April 5, 1976

Mr. James C. Edwards Manager, Clean Environment Program Tennessee Eastman Company P. O. Box 511 Kingsport, Tennessee 37660

Dear Mr. Edwards:

As a follow up to our telephone conversation of April 2, 1976, this letter is a formal request for emission information from Tennessee Eastman's dimethyl teraphthalate and teraphthalic acid (DMT-TPA) manufacturing plant and a request for a site visit to the DMT-TPA plant in Kingsport, Tennessee.

GCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9, 1976.

The Tennessee Eastman DMT-TPA plant in Kingsport, Tennessee had been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc. under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA on August 30, 1972. The results were incorporated into a report titled, "Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January, 1974. For your convenience, copies of the completed questionnaire are attached. Much of the type of information that we need was supplied in these questionnaires, but the information must be updated.

As part of this study, I would like to visit and gather information from the personnel at the Kingsport plant. I have enclosed a letter of intent stating the reasons for a plant visit and the information that would be needed. Authorization for this project can be obtained from the EPA Project Officer, Mr. Andrew Trenholm. Mr. Trenholm's address is given in the enclosed letter.

I am looking forward to Tennessee Eastman's response to our request and would appreciate any assistance that you could give us in this matter. If you have any questions or comments, please feel free to contact either mr or Mr. Trenholm.

Sincerely, Da D J Dunchy Dr. Donald F. Durocher

Senior Scientist

DFD:nc Enc.

GCA/TECHNOLOGY DIVISION A

April 15, 1976

Tennessee Eastman Company Kingsport, Tennessee

Gentlemen:

This letter is a request to visit Tennessee Eastman's DMT-TPA plant in Wilnington, North Carolina. The purpose of this visit will be to gather information on atmospheric emissions, emission control systems, and methods employed to expand a DMT-TPA plant's output capacity.

GCA/Technology Division is under contract to the EPA to update basic background information on DMT-TPA plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS) which are defined in Section 111 of the Clean Air Act.

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. This project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA.

The Tennessee Eastman Company DMT-TPA plant in Wilmington, North Carolina, has been previously polled by questionnaire for information of the type we require by the Houdry Division of Air Products and Chemicals, Inc., under the auspices of the EPA. The EPA Project Officer was Leslie B. Evans. The questionnaire was returned to the EPA by Mr. James C. Edwards on August 30, 1972. The results were incorporated into a report titled, Survey Reports of Atmospheric Emissions from the Petrochemical Industry, Volume II (EPA-450/3-73-005b), published January 1974. For your convenience, a copy of the completed questionnaire is attached.

Much of the type of information that we need was supplied by this questionnaire, but the information must be updated. The information that we would like to obtain is summarized below:

1. The types of control equipment or methods of process control used by the plant to reduce atmospheric emissions. If at all possible, installation and operating costs for control equipment would be desired. The economics of control would provide basic supplemental information for determining the best system of emission reduction. Mass flow balances around the control device would be useful information.

2. The quantities and compositions of emissions from all atmospheric emission points. A process flow diagram for the plant would be very helpful. GCA realizes that process stream data may be proprietary. In the absence of actual measurements of the atmospheric emissions, mass balance calculations would be sufficient.

In addition, GCA must delineate all parameters affecting the mass flow rate of emissions (e.g., non-normal operating conditions, reactor vent dumps, season of the year, etc.).

(Information of the type outlined in Points 1 and 2 was contained in the Houdry Division questionnaire. Therefore, updating this information would be straightforward.)

3. Finally, as NSPS are applicable to facilities that are modified in such a way as to increase the mass rate of emissions, GCA will have to identify how DMT-TPA plants increase production rates or otherwise modernize facilities. The key point here is to quantitatively describe the effects of expansion and modernization techniques on the mass rate of emission. This last point was not covered in the Houdry Division Report. However, we feel that this type of information can readily be gained in conversation with plant managers.

GCA has three options open to it in the acquisition of data for this project:

- Option 1 Only literature data can be used. This approach is unsatisfactory as there is little data available in the open literature, and that which is available is several years old.
- Option 2 Industrial questionnaires, similar to the Houdry Division questionnaire and applicable under Section 114 of the Clean Air Act, can be sent out through the EPA. GCA would not like to use this approach for three reasons:
 - 1. the turn-around time for a letter is long compared with the duration of the project,
 - questionnaires are not flexible and cannot easily be changed to reflect the situation,
 - 3. questionnaires are generally considered an imposition on the plant manager's time.

Option 3 - The GCA Project Manager, Dr. Donald Durocher, can visit the Wilmington plant to collect the information from plant personnel. This is the course that GCA hopes to pursue. This option would allow for a rapid transfer of information and would ensure a good understanding of the Wilmington plant processes and, therefore, an accurate presentation of the results.

-3-

As the duration of this project is short, an appointment to visit your plant sometime in April or early May would be quite appealing. I am looking forward to your response to this request. If you have any questions on this request, please contact me or Mr. Andrew Trenholm. Mr. Trenholm's address is below:

> Mr. Andrew Trenholm EPA - Office of Air Quality and Planning Emission Standards and Engineering Division Research Triangle Park - Mail Drop #13 Research Triangle Park, North Carolina 27711

Tel: (919) 688-8146, Ext. 301.

Thank you.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

GCA/Technology Division Burlington Road Bedford, Mass. 01730

Tel: (617) 275-9000, Ext. 352

DFD: jaf Enclosure

PERSON CONTACTED Mr. J.C. Edwards	DATE
ORGANIZATIONTennessee Eastman	
GCA PERSONNELD.F. Durocher	
DISCUSSION SUMMARY	
Jim had not yet read our letter, but he wi	11 read it now and respond
to it either in writing or by phone. He s	ees no problem. Also, in
the letter I said that the plant was in Wi	lmington, N.C., when it is in
Kingsport, Tenn.	·
	·
TELEPHONE CON	VERSATION
PERSON CONTACTED Mr. W. M. Crawford	DATE 4/28/76
ORGANIZATION Tennessee Eastman	
GCA PERSONNEL D.F. Durocher	
DISCUSSION SUMMARY	
Jim Edwards has assigned Bill Crawford to	cover this. He has discussed
our request with the operating people. Th	ey have looked over the Houdr
questionnaire and said that they won't be	able to give us information
until June.	-
Cost figures are by and large unobtainable	in a shorter time period.
He said that there have been very few emis	sion estimates made after
1972.	• •
For DMT they have retained their existing	facilities and added on new
buildings and equipment. For TPA they have	
	on wasteving direct

I suggested that we use the old Houdry information for older units and go through emission permits for the newer units. He said that that sounded like a good idea, and we set up a tentative meeting date for the 27th of May. He will discuss this with the plant personnel. I told him that I would send him a copy of Model IV.

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. W.M. Crawford	DATE _	5/21/76
ORGANIZATION Tennessee Eastman		
GCA PERSONNEL D.F. Durocher		
DISCUSSION SUMMARY		
Bill said that I would be dealing with Niel Simmons. He said that the 27th was all right but that he would me. I should come into the Tri Cities Airport and stann. We will meet at 9:00 a.m.	check	back with
TELEPHONE CONVERSATION		
PERSON CONTACTED Mr. Robert Long	DATE _	5/14/76
ORGANIZATION Tennessee Eastman		
GCA PERSONNEL D.F. Durocher		
DISCUSSION SUMMARY		
Mr. Long said that he would have to know what information buPont is willing to give. They will		

He said that I should send him a letter outlining the type of information that we require and he will see what he can do.

information for publication. In essence DuPont can only give as much

information as Tennessee Eastman is willing to give.



May 1, 1976

Mr. W. M. Crawford Tennessee Eastman Company P.O. Box 511 Kingsport, Tennessee 37660

Dear Bill,

I have enclosed a copy of the Model IV calculations that we will be performing with the data that is gathered from DMT-TPA plants. This model was included in the report, Impact of New Source Performance Standards on 1985 National Emissions from Stationary Sources, Volume I that was prepared for the EPA by the Research Corporation of New England.

I am looking forward to meeting with the Eastman personnel on May 27. If you have any questions on the use of Model IV please feel free to call.

Sincerely,

Donald Durocher

GCA/TECHNOLOGY DIVISION

May 17, 1976

Mr. Robert L. Long, Licensing Manager Tennessee Eastman Company P. O. Box 511 Kingsport, Tennessee 37660

Dear Mr. Long:

This is a follow up letter to our telephone conversation of May 17.

GCA/Technology Division is under contract to the EPA to update basic background information on air emissions from dimethyl teraphthalate and teraphthalic acid (DMT-TPA) manufacturing plants. The results of this study will be used as part of the EPA Emission Standards and Engineering Division's assessment of numerous industries for the purpose of establishing priorities for setting new source performance standards (NSPS).

The purpose of this project is to use updated information to estimate the expected reduction of atmospheric emissions from DMT-TPA plants when NSPS are applied. The title of this study is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Teraphthalate and Teraphthalic Acid Manufacturing." These NSPS will not be set as part of this study, but will be based on data collected during this study. The project is scheduled to be completed by June 9, 1976. The EPA Project Officer is Mr. Andrew Trenholm of the Emission Standards and Engineering Division of the EPA. Mr. Trenholm's address is included at the end of this letter.

I have been visiting each manufacturer to obtain air emission information for the DMT-TPA industry. On May 12 I visited Mr. John R. Cooper, Polymer Intermediates Department of E.I. DuPont to obtain air emission data for their Wilmington, N.C. plant. He stated that, as DuPont leases its DMT technology from Tennessee Eastman, he could not release any information on air emissions from the process without your express authorization.

Specifically, the information we are seeking is:

- a block process flow diagram of the DMT facility;
- the quantity and composition of all air emissions from the purified DMT unit;
- the means by which the above data was determined (i.e. design estimate, materials balance, actual sampling and analysis);
- the type, efficiency and design characteristics of all emission control devices, used in the DMT facility.

To the best of my knowledge none of this information is proprietary. I have been in contact with James E. Edwards and W.M. Crawford of Tennessee Eastman and will be visiting them May 27 to gather similar information on air emissions from Tennessee Eastman's DMT-TPA plant in Kingsport, Tennessee.

If possible, could you authorize John Cooper to give us the air emission information for the DMT process from DuPont's Wilmington, North Carolina plant? I am looking forward to your reply and would appreciate any assistance you could give me in this matter.

Sincerely,

Dr. Donald F. Durocher Senior Scientist

DFD:nc

Mr. Andrew Trenholm
EPA - Office of Air Quality and Planning
Emission Standards and Engineering Division
Research Triangle Park - Mail Drop #13
Research Triangle Park, North Carolina 27711

Tel. 919-688-8146, ext. 371



TENNESSEE EASTMAN COMPANY

A Division of Eastman Kodak Company
KINGSPORT, TENNESSEE 37662 • 615 246-2111

June 3, 1976

Dr. A. D. Gilbert
E. I. du Pont de Nemours
Wilmington, Delaware 19898

Dear Dr. Gilbert:

I have attached a copy of a letter dated May 17, 1976, from GCA/Technology Division requesting Eastman to authorize the disclosure of information for the DMT process licensed from Eastman and operated by Du Pont in Wilmington, North Carolina.

We hereby authorize Du Pont to disclose information on this process which it deems appropriate in answer to this request and similar requests originating with Government regulatory agencies. It is understood that, in establishing the extent of the disclosure, Du Pont will be guided by the same practices which it uses when disclosing to Government regulatory agencies its own information of a similar nature.

Yours very truly,

Robert L. Long Manager, Licensing

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Enclosure

cc: Dr. D. F. Durocher
GCA/Technology Division
Burlington Road
Bedford, Massachusetts 01730

REPORTS AND CORRESPONDENCE WITH STATE AIR POLLUTION CONTROL AUTHORITIES

Alabama

The following contacts were made for the purpose of obtaining state regulations and permit applications for DMT-TPA plants in the State of Alabama.

Telephone Summaries and Letters

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. James W. Cooper	DATE _	3/31/76
ORGANIZATION Alabama Air Pollution Control Commission		
GCA PERSONNEL P. Spawn		
DISCUSSION SUMMARY		
The local agency that has jurisdiction over the Amoco Decatur, Alabama is:	TPA pla	ant in
Tri-County District Health Servic Air Pollution Control Program Decatur, Alabama		
The director of the program is Mr. Gene Gaywell, at 2	05–353–	7021.
TELEPHONE CONVERSATION		
••		
PERSON CONTACTED Mr. Gene Saywell	DATE _	3/31/76
Air Pollution Control Program, Tri-Cou ORGANIZATION District Health Service, Decatur, Ala.	-	
DISCUSSION SUMMARY		
Mr. Saywell was quite knowledgable about the Amoco TP	A plant	in Decatur
Alabama. Many (professional) people feel that this p	lant is	the most

complex air pollution source in the state. There are several names for TPA - TPA, TA, and PTA - purified terephthalic acid. The state and Amoco use the latter - PTA.

There are four basic plant processes at the Amoco TPA plant.

- 1. Aromatics converted to para-xylene
- 2. p-xylene to crude TPA
- 3. Purification to PTA
- 4. Formation of a dimethyl ester.

The plant is rapidly expanding and production is now about twice the 1972 levels. When the fifth p-xylene oxidation unit is completed, total plant capacity will be 2 billion lb/yr.

Permit emission data is available and will be put together and sent. There are 50 separate permits (20 boilers in plant). The data on CO-HC-NO $_{\rm X}$ emissions are engineering estimates, made by Amoco or their consultant. Mr. Saywell has found some estimates to be considerably lower than actual emissions. (The estimates in question were for the esterification units.)

Amoco is required to perform stack tests with the APC office overseeing the process. However, the sampling program is only for particulates and SO_2 and hasn't really begun yet as they are concentrating on getting the plant in compliance. State agency does stack testing to evaluate violations or perform research.

Another aspect of major concern to Mr. Saywell's office is high particulate emissions from incineration of the large quantities of molten solid waste generated. The strict incinerator particulate limits of 0.2 lb/ 100 lb charged are exceeded. Currently, there are concerns over whether or not incinerator standards should apply to this disposal method. The incinerator is equipped with electrostatic precipitator. He was unsure of what standards would apply to a NO catalytic incinerator.

Regulations: No CO limits - the section on "petroleum processes" does not apply to TPA from para-xylene. No HC regulations on emissions (only in Mobile County), but there are controls on storage, transfer, etc. No specific regulations for para-xylene. NO $_{\rm X}$ limits for nitric acid and coke plants only. Particulate emissions controlled by process weight table in original Air Law (1971). Process weight calculation includes all raw ingredients including water.

TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. H. Theumer	DATE <u>4/1/76</u>
ORGANIZATION Tri	County District Health Se	rvice
GCA PERSONNEL	P. Spawn	<u>.</u>

DISCUSSION SUMMARY

Apparently, Decatur and Tri County District are separate organizations. While they are following the state A.P. regulations, several points should be noted:

- 1. Section 6.2, Volatile Organics Loading regulations are not applicable simply because there are no facilities that large.
- 2. Mr. Theumer was unaware of the existence of any water separation facilities which would be controlled by Section 6.3.
- 3. Regulation 6.1, storage of organics, is applied in Decatur.
- 4. According to Mr. Theumer, Sections 6.6 and 6.6.9, organic and photochemically reactive solvents, apply to solvent manufacture and would not apply to the Decatur TPA plant. I'll confirm this with Tri County District A.P.C. Director, Gene Saywell.

PERSON CONTACT	ED Mr. Seever	DATE _	4/15/76
ORGANIZATION _	Air Pollution Control Program, County District Health Service		<u>.</u>
GCA PERSONNEL	P. Spawn		
DISCUSSION SUM	MARY		

Mr. Gene Saywell, County A.P.C. Director, asked Mr. Seever to compile the information. Mr. Seever called us to verify what was needed.

The Tri County (Amoco PTA is in Morgan County) regulations are the same as the state's, except for emission standards for HC. Alabama is currently regulating particulates and $\mathrm{SO}_{_{\mathbf{X}}}$, and not worrying about others. HC regulations on the books are never enforced, to his knowledge. He will send us county regulations.

He seemed interested, will search out files and send us available emission and plant data — available emission tests are only for particulates and SO_{x} . Other data for HC-CO may be available, but information may be from Amoco's calculations as opposed to stack sampling.

Expect information early next week - 4/19.

Illinois

The following contacts were made for the purpose of obtaining state regulations and permit applications for DMT-TPA plants in the State of Illinois.

Telephone Summaries and Letters

TELPHONE CONVERSATION

THE NOVE CONVENDE TON
PERSON CONTACTED Mr. Miles Zamco DATE 3/30/76
ORGANIZATION Division of Air Pollution Control, Illinois EPA
GCA PERSONNEL P. Spawn
DISCUSSION SUMMARY
The Amoco TPA plant in Joliet has a confidential permit so no informations is available to us. Mr. Zamco suggested contacting Mr. Marshal
Monarch, Air Resources Analysis Section, for specific questions regarding standards (217-782-1830).
TELEPHONE CONVERSATION
PERSON CONTACTED Mr. Marshal Monarch DATE 3/30/76
ORGANIZATION Air Resources Analysis Section, Illinois EPA
EPA PERSONNEL P. Spawn
DISCUSSION SUMMARY
He'll send a copy of the air pollution regulations. Currently there are some NO limits, CO limits of 200 ppm and HC limits of 8 lb/hr for photochemically reactive matter. Raw material input to Amoco plant in Joliet includes aromatics; most aromatics are photochemically reactive so the HC standard probably applies. There are specific standards for particu-
lates for catalytic regneration processes.

Presently, Amoco is involved with hearings regarding their proposal to reduce or dispense with CO emission limits. Apparently, some plants (including this one) cannot meet the 200 ppm standard. Several other Amoco plants in the state manufacture chemicals of a similar nature and classification as TPA.

There are no regulations specifically for TPA manufacture. There is a local air pollution agency in Joliet, but he didn't think they had much authority.

While the emission permit is confidential, emission data may be available from the proceedings of the hearings for the initial permit which are available at the State Air Control Board in Chicago.

TELEPHONE CONVERSATION

PERSON CONTACTED	Mr. Marshal Monarch	DATE	3/30/76
ORGANIZATION Air	Resources Analysis Section,	Illinois EPA	
GCA PERSONNEL	P. Spawn		
DISCUSSION SUMMARY	<i>t</i> :		

Hearings will be held in April regarding CO limits.

Illinois EPA has considered TPA manufacture as a petrochemical process, applying the 200 ppm standard. Amoco is contesting this, saying that the partial oxidation involved in TPA manufacture isn't a true petrochemical process and should have different CO regulations.

Monarch's department considers the HC emission regulations applicable to TPA but hasn't current knowledge. For this, contact Dr. John Reed, Permits Section, 217-782-0088.

For particulates, new sources, such as additional process units, must meet new source standards, Section 203a. In addition, the total emissions from the new units plus the old must be less than Section 203b.

Each operation in the process — boilers, reactors, and incinerators — must abide by regulations applicable to that particular process. Total emissions, from all operations, is not of concern unless ambient air standards are exceeded.

TELEPHONE CONVERSATION

PERSON CONTACT	Mr. G.J.	Reddy			DATE _	4/2/76	_
ORGANIZATION _	Transportation	Planning,	Illinois	EPA			
GCA PERSONNEL	P. Spawn						

DISCUSSION SUMMARY

Mr. Reddy wasn't completely familiar with all regulations, but informed me of the following:

FOR PARTICULATE EMISSION:

Fuel burning standards apply to boiler
Incinerator standards apply to incinerator

Process standards apply to overall process, exclusive of the boiler and incinerator portions of plant

Permit information is available from:

Mr. Desai - 217-782-3003

Stationary source standards information is available from:

Mr. Marshal Monarch 217-782-0800 (spoke with Mr. Monarch previously)

PERSON CONTACTED Mr. Desai DATE 4/2/76
ORGANIZATION Permit Section, Illinois EPA
GCA PERSONNEL P. Spawn
DISCUSSION SUMMARY
He said that information on production rates and increases in production is confidential!
He also said that TPA manufacture is considered a petrochemical process thus, the regulations specific to petrochemicals (CO, HC) apply. CO emissions are governed by fuel burning regulations for boilers and the petrochemical standard (200 ppm) for the rest of the plant.
TELEPHONE CONVERSATION
PERSON CONTACTED Mr. Joe Ancel DATE 4/6/76
ORGANIZATION Illinois EPA
GCA PERSONNEL P. Spawn
DISCUSSION SUMMARY
This county office doesn't deal with industrial air pollution. Their office has no emission data for the Amoco TPA plant in Joliet. For emission data, suggested contacting Keith Conklin, Il. EPA Permit
Section, 217-782-2113.
For monitoring and emission data, try
C.C. Willard, Manager Field Operations Section 312-345-9780

PERSON CONTACTED Dr. Chester Snell	DATE 4/5/76
ORGANIZATION Illinois EPA	
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
An afterburner for combustion of HC would be regulated	by process emis-
sion standards. TPA is considered a petrochemical proc	ess. For actual
organic emissions. Continue 2055 and 2056(1)s apply: be	2050(1)0
organic emissions, Sections 205f and 205g(1)c apply; ho	wever, 200g(I)C
is much stricter and is the governing regulation.	
He will pull the files and see if any emission data is	available.
TELEPHONE CONVERSATION	
	•
PERSON CONTACTED Dr. Chester Snell	DATE 4/6/76
ORGANIZATION Division of Air Pollution Control, Illino	ois EPA
GCA PERSONNEL P. Spawn	,
DISCUSSION SUMMARY	
Dr. Snell looked at the permit on file for the Amoco TF	'A plant in Joliet.
He gave the following information:	

There are two TPA manufacturing units

	TPA production	Average particle emission	Permissible emissions
#1	13,000 lb/hr	17 1b/hr	40.8 lb/hr
#2	15,200 lb/hr	17.7 lb/hr	44.1 lb/hr

No other emissions are listed on this permit which is dated May 1973. No hydrocarbon emissions listed; however, the Illinois EPA wasn't as fussy about HC in 1973 as they are in 1976. He said there are no other emission data in the permit section.

PERSON CONTACTED Mr. Lovel1	DATE 4/7/76
ORGANIZATION Rield Operations Section, Illinois EPA	
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
•	

This office has emission data, but there is some question as to distribution of information. He suggested requesting information, by letter, stating precisely what is desired:

To: Mr. C.B. Willard
Regional Manager
Illinois EPA
1701 First Ave.
Maywood, Illinois 60153
312-345-9780

Mr. Lovell felt they could give us the information.

Information on hearings can be obtained from Mr. DuMill, Clerk, Illinois Pollution Control Board, Chicago, Illinois, 312-793-3620.

Apparently, Amoco has had some trouble over confidentiality of emission and process data, and they are somewhat concerned over its release. Thus, the request should be in writing.

April 7, 1976

Mr. C. B. Willard Regional Manager Illinois Environmental Protection Agency 1701 First Avenue Maywood, Illinois 60153

Dear Mr. Willard:

GCA/Technology Division is under contract with the EPA to update basic background information on dimethyl terephthalate (DMT) and terephthalic acid (TPA) manufacturing plants. The results of this survey will be used as basic data when the EPA sets new source performance standards for NO_x emissions from the DMT-TPA industry. The EPA Project Officer is Andrew Trenholm. His address is given below. The title of the project is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Terephthalate and Terephthalic Acid Manufacturing."

As part of this study, we must contact state air pollution agencies to delineate all applicable state and local air pollution emission control regulations. For each plant we need to identify all atmospheric emission sources and the quantities and composition of all air waste streams. Also, air pollution control devices must be tabulated.

GCA is aware that Amoco's emission permit is confidential. However, Mr. Lovett of the Field Services Section suggested that emission data for this plant would be available to us upon written request. Therefore, could you please send us such emission data as available.

We thank you for your time and are looking forward to your response.

Sincerely,

Donald F. Durocher Senior Scientist Ext. 352

Mr. Andrew Trenholm
EPA - Office of Air Quality and Planning
Emission Standards and Engineering Division
RTP- Mail Drop #13
Research Triangle Park, N.C. 27711

Tel. 919-688-8146, Ext. 301

PERSON CONTACTED	Mr. DuMill	DATE 4/8/76
ORGANIZATION	Illinois EPA	
GCA PERSONNEL	P. Spawn	

DISCUSSION SUMMARY

Illinois doesn't hold hearings prior to granting emission permist except for a "permit denial appeal." Mr. DuMill had no recollection of such a hearing for Amoco and TPA — he felt he'd remember "such an unusual process."

There may be emission data in the transcripts of the rule making proceedings, which preceded the original Air Act, 1970-71. Witnesses from Amoco or trade associations may have introduced emission data as an exhibit (evidence). These transcripts are in Mr. DuMill's office and can be examined. He doesn't have the staff to search it out.

Further information on the 1970-71 hearings might be provided by Dr. Richard Wadden, Assistant Professor, University of Illinois, 312-996-8855. Dr. Wadden was a technical assistant for the Pollution Control Board; he attended all of these hearings and may recollect if any data was presented by Amoco.

Telephone: 312/345-9780 Address Reply To: Suite 1205 1701 First Avenue Maywood, Illinois 60153

April 21, 1976

Mr. Donald F. Durocher
Senior Scientist
GCA/Technology Division
Burlington Road
Bedford, Massachusetts 01730

Dear Mr. Durocher:

Your request for data from Amoco's confidential permit has been forwarded to Keith Conklin, Environmental Protection Agency, DAPC Permits, 2200 Churchill Road, Springfield, Illinois, 62706. He will be happy to respond to the extent he is able.

Good luck in your study.

Very truly yours

C.B. WILLARD Regional Manager

CBW:dd

cc: Region II Files

Environmental Protection

2200 Churchill Road, Springfield, Illinois 62706 ALECTION

Telephone:

217/782-2113

May 12, 1976

Mr. Donald F. Durocher Senior Scientist GCA/Technology Division Burlington Road Bedford, Massachusetts 01730

Dear Mr. Durocher:

This is in response to your letter of April 7, 1976 to Mr. C. B. Willard requesting information concerning emissions from Amoco Chemical Company plant. As you state, most of the Amoco Chemical Company files are confidential and the Agency is not at liberty to disclose information contained in such files to the Federal EPA or to any contractor of the Federal EPA. You are welcome to review the non-confidential files of the Amoco facility at this office.

Keith J. Conklin, P.E. Manager, Permit Section

Division of Air Pollution Control

KJC:1j1

North Carolina

The following contacts were made for the purpose of obtaining state regualtions and permit applications for DMT-TPA plants in the State of North Carolina.

Telephone Summaries and Letters

TELEPHONE CONVERSATION

PERSON CONTACT	TED Mr.	John Romans	DATE 3/29/76
ORGANIZATION _	Division	of Environmental	Management, North Carolina
GCA PERSONNEL	P. Spawn		
			,

DISCUSSION SUMMARY

A copy of the permit for the Hercules plant in Wilmington, N.C. is available upon written request from Mr. W.E. Knight, Acting Director, Division of Environmental Management, P.O. Box 27687, Raleigh, N.C. 27611. Sent request 3/31/76.

According to John Romans, there is little data on permit. No CO data is available since CO is not regulated. Confidential data could be released to EPA of RTP or Region IV, before given to a contractor. We could possibly get such data from EPA. However, Romans has little data on plant emissions. He suggested talking to Hercules, as they have been quite cooperative. If a plant visit is proposed, Mr. Romans offered his services for making arrangements, citing his department's "good rapport" with Hercules.

The current air regulations are the same as the original "North Carolina Water & Air Resources Act" of 1971 except for the ambient $SO_{_{\mathbf{X}}}$ standard. There are no CO regulations and no local agencies.

GCA/TECHNOLOGY DIVISION



March 30, 1976

Mr. W. E. Knight, Acting Director Division of Environmental Management P. O. Box 27687 Raleigh, North Carollna 27611

Dear Mr. Knight:

GCA/Technology Division is under contract with the EPA to update basic background information on dimethyl terephthalate (DMT) and terephthalic acid (TPA) manufacturing plants. The results of this survey will be used as basic data when the EPA sets new source performance standards for NO emissions from the DMT-TPA industry. The EPA Project Officer is Andrew Trenholm. His address is given below. The title of the project is "Screening Study to Determine Need for Standards of Performance for New Sources of Dimethyl Terephthalate and Terephthalic Acid Manufacturing."

As part of this study, we must contact state air pollution agencies to delineate all applicable state and local air pollution emission control regulations. For each plant we need to identify all atmospheric emission sources and the quantities and composition of all air waste streams. Also, air pollution control devices must be tabulated.

Mr. John Romans indicated that your division has very little data on the Hercules DMT plant in Wilmington, North Carolina. However, as we must examine all possible data sources, could you please send us a copy of the Wilmington plant's emission permit, or any additional emission data that may be available from your office. In addition, could you please tell us the status of the Hercules DMT plant in Burlington, North Carolina? Please send us a current copy of North Carolina's air pollution regulations as they will be quite helpful.

We thank you for your time and are looking forward to your response.

Sincerely,

Peter Spawn

Environmental Engineer

Mr. Andrew Trenholm
Environmental Engineer
EPA-Office of Air Quality and Planning
Emission Standards and Engineering Division
RTP-Mail Drop #13
Research Triangle Park, N.C. 27711

Tel. 919-688-8146, Ext. 301

PERSON CONTACTED Mr. Mike Sewell	DATE <u>4/7/76</u>
ORGANIZATION North Carolina Division of Environme	ental Management
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
He confirmed the existence of DuPont and Hercules is will check on the Hercules Plant in Burlington.	in Wilmington; he
The letter we sent requesting emission data has to people and then to Mr. Sewell. He hasn't seen it,	
He was unsure of which process — air or nitric acid plants. He offered to find out and return the call	
Mr. James McColman is the Chief of the Air Quality	Section at the same
phone number.	
TELEPHONE CONVERSATION	
PERSON CONTACTED Mr. Mike Sewell	DATE 4/7/76
ORGANIZATION North Carolina Division of Environme	ental Management
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
Mr. Sewell could find no information or mention of in Burlington, N.C. He will continue looking. The for emission data; he is checking these and will ca	ere are several source
He found information on Hercules and DuPont DMT pla	nnts in Wilmington,

record of nitric acid as input to either plant.

N.C., but information was sketchy with no emission data. There was no

He mentioned ethylene

glycol and TPA and when he spoke of raw material input to the Hercules DMT plant. Since these compounds are used for the polyester production and not DMT, there was some confusion. He will keep looking and call us back.

TELEPHONE CONVERSATION

PERSON CONTACTED Mr. Andrew Carlton	DATE 4/21/76
ORGANIZATION North Carolina Division of Air Polluti	on Control
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
After consultation with John Romans at the main offic	e, Mr. Carlton in-
dicated he would send us the available emission data	for the DuPone
and Hercules DMT plants in Wilmington, N.C. (Note:	We sent a letter
to W.E. Knight requesting this information and he ref	erred us to Mr.
Carlton.) We expect the information in a week.	
TELEPHONE CONVERSATION	
PERSON CONTACTED Mr. Mike Sewell	DATE 4/21/76
ORGANIZATION North Carolina Division of Environment	al Management
GCA PERSONNEL P. Spawn	•
DISCUSSION SUMMARY	
Our letter to W.E. Knight requesting emission data ha	s been found.
They referred us to the Regional Engineer for data.	
Andy Carlton	
919-762-3394 (Wilmington, North Carolina)	
(Wilmington, North Carolina)	

PERSON CONTACT	ED _	Mr.	Mike	Sewell	_		DATE	4/21/76	
ORGANIZATION	Nort	h Ca	rolina	Division	of	Environmental	Mana	gement	
GCA PERSONNEL	Р.	Spaw	n						

DISCUSSION SUMMARY

The hydrocarbon emission limit for photochemically reactive compounds is definitely applicable to DMT plants in Wilmington - 40 lb/day or 85 percent reduction, whichever is larger. This limit applies to the total plant site, not individual processes or equipment.

He hasn't seen our letter to W.E. Knight, requesting permit and emission data - he will check and I'll call back again today.

BOARD OF HEALTH

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J. M. DISTOWISH, M.D. DIRECTOR OF HEALTH

BUREAU OF ENVIRONMENTAL CONTROL George L. Hansel, Director METROPOLITAN HEALTH DEPARTMENT 311 23rd AVENUE, NORTH NASHVILLE, TENNESSEE 37203 (615) 327-9313

April 22, 1976



Mr. Peter Spawn GCA Technical Division Burlington Road Bedford, Massachusetts 01730

Dear Mr. Spawn:

In accordance with your request, following is a survey of the emissions from the E. I. Dupont de Nemours & Company, Incorporated's Old Hickory DMT production facility:

	Processes	Emissions (#/Hr)
1.	Manufacturing of Terephthalic Acid	5.3 (Particulate) 1,000 (Carbon Monoxide) 750 (Hydrocarbon) 80 (Other Acetic Acid Stora)
2.	Manufacturing of Dimethyl Terephthalate	36 (Hydrocarbon)
3.	Purification of crude Dimethyl Terephthalate	59 (Hydrocarbon)
4.	Storage of Dimethyl Terephthalate	20 (Hydrocarbon)
5.	Acetic Acid Storage	1 (Hydrocarbon)

These emissions are estimates, since this plant is not yet in operation. Dupont will also have a process weight incinerator at this facility. The emissions from this source are presently unknown; however, we have been assured that the incinerator will meet the allowable emission standards for an incinerator.

If there are any questions concerning this information, feel free to contact me.

Very truly yours,

Paul J Bontrager, P. E.

Director, Pollution Control

PJB/jl

PERSON CONTACTI	ED Mr. William Knight	DATE 4/29/76
ORGANIZATION _	North Carolina Division of Air Pollution	Control
GCA PERSONNEL	P. Spawn	

DISCUSSION SUMMARY

Our request for emission data filtered to Mr. Tippitt. Permits are available, but the main source of data is in his office files. He was very knowledgable about the Hercules and DuPont DMT plants in Wilmington, and can give emission data as detailed as leaks from various valves. I explained what we are doing and what information would be helpful. He'll compile the information and send by the second week in May.

I also discussed confidentiality of information and stressed that we wanted public information and nothing that would hinder relations or offend industries. Actual production rates are available but are trade secrets.

The main emission sources are the air oxidation (para-xylene) units since the following operations involve product handling and purification.

EPA visitors had been given a hard time at the plants. They obtained relatively little information. Mr. Tippitt offered his services and capabilities to obtain information not available to an "outsider."

South Carolina

The following contacts were made for the purpose of obtaining state regulations and permit applications for DMT-TPA plants in the State of South Carolina.

Telephone Summaries and Letters

TELEPHONE CONVERSATION

PERSON CONTACT	ED Mr. W.G. Crosby	DATE 4/5/76
ORGANIZATION _	Department of Health and En	vironmental Control
GCA PERSONNEL	P. Spawn	
DISCUSSION SUM	IMARY	
Mr. Crosby pro	mised to send copies of stat	e laws. The permit applica-
tions only lis	t calculated values of SO a	nd particulate loadings.
Therefore, he	won't send any permit inform	ation.

There are no regulations for HC, $NO_{_{_{\mbox{\scriptsize X}}}}$, and CO for the State of South Carolina.

Tennessee

The following contacts were made for the purpose of obtaining state regulations and permit applications for the DMT-TPA plants in the State of Tennessee.

Telephone Summaries and Letters

TELEPHONE CONVERSATION

PERSON CONTACT	TED Mr.	John Walton	<u>.</u>		DAT	E	
ORGANIZATION _	Tennessee	Division of	Air	Pollution	Control		
GCA PERSONNEL	P. Spawn				. •		
DISCUSSION SU	MMARY			,			

There is no local agency for Kingsport in Sullivan County. Information on permits can be obtained from Gerald McInnis Monday - he is in the same office.

There is a large file of information on the Tennessee Eastman Plant. There are no regulations specifically for DMT/TPA plants. There are no HC regulations in state, except for new or modified sources, in which case Chapter 7 of original law applies.

New regulations for SO_2 and particulates have been adopted by Tennessee, but not yet approved by EPA. Sullivan County has been reclassified as Class III; the 1,000 ppm SO_{x} limit now applies to process emissions. A new clause in the regulations places "new incinerators and thermal oxidizers" in a process category for the regulation.

New regulations have also been adopted for particulates. Tennessee Eastman has opted for the diffusion equation method of standard setting. He will send ${\rm SO}_{_{\rm X}}$ regulations immediately, and the other regulations when available from printer.

NO and CO standards were not discussed. I will talk with Mr. McInnis in the permit second on Monday.

TELEPHONE CONVERSATION

PERSON CONTACT	ED	Mr.	McInnis	··		DAT	E 3/30/7	76
ORGANIZATION _	Teni	nessee	Division of	Air	Pollution	Control		
GCA PERSONNEL	Р.	Spawn			· ·		•	

DISCUSSION SUMMARY

Mr. McInnis was quite helpful. He will send us copies of permits and other data on the Tennessee Eastman Plant in Kingsport, Tenn. There is no real NO problem at this plant; however, there are problems with the opacity of particulate emission low particulate count, but high opacity.

The DuPont Plant in Old Hickory increased production about 2 years ago. (Note: See conversation with Mr. Bontrager of the local agency.) Its permit is in the Davidson County local agency office. There are problems at this plant with NO $_{_{\rm X}}$ - it is emitted periodically as a visible cloud or plume at which time the regulations are enforced. Periodic monitoring and emission reports are not required.

There are new standards for particulates and SO $_{\rm x}$ but no regulations on NO $_{\rm x}$. He will send us a copy of the regulations and their current status.

Angela Samuelson, a liaison officer between the state and local offices, can refer us to someone at the Davidson County office. We can also call Paul Bontrager, the Director, at 615-327-9313, Ext. 215.

PERSON CONTACTED Mr. Bontrager	DATE 3/30/76
Metropolitan Health Dept. of Nashville ORGANIZATION Counties	e and Davidson
GCA PERSONNEL P. Spawn	. ,
DISCUSSION SUMMARY	
The DuPont DMT Plant in Old Hickory, Tennessee has be	een closed for 1½
years. A new plant is under construction at the same	e site and will be
on line in 6 to 8 months. Mr. Bontrager has a 2-incl	h thick operating
permit for the new (?) plant and will send us copies	of the emission
data summary - there are 20 emission points, each of	
The plant has (will have?) an incinerator with elect:	
tator for liquid waste disposal. Incinerator partic	
apply here. An afterburner process, as in the destre	•
governed by process particulate emission standards.	x, 19
governed by process particulate emission standards.	,
TELEPHONE CONVERSATION	
IELEFRONE CONVERSATION	
PERSON CONTACTEDMr. Bontrager	DATE 4/16/76
Metropolitan Health Dept. of Nashvil ORGANIZATION Counties	le and Davidson
DISCUSSION SUMMARY	
Emission data for the new DuPont DMT Plant in Old Hi	ckory, Tenn. hasn't
been compiled. Mr. Bontrager requested the EPA cont	ract number and

project title and said he will get to it as soon as possible.

PERSON CONTACTED Mr. McInnis	DATE <u>4/20/76</u>
ORGANIZATION Tennessee Division of Air Pollution	Control
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
I called Mr. McInnis to see if he had sent us emiss	ion and permit data
for the Tennessee Eastman DMT Plant; he hadn't.	
Regulations are still out of pring; he will send th	nessee is requiring
"best available control" technology. Also, for new is adopting the federal NSPS.	sources, the state
is adopting the rederal Nors.	
Though he said data would be on its way and will se	nd regulations when
available, this is questionable. I suggest calling	again in a week or
so.	
TELEPHONE CONVERSATION	
PERSON CONTACTED Mr. McInnis	DATE <u>5/5/76</u>
ORGANIZATION Tennessee Division of Air Pollution	Control
GCA PERSONNEL P. Spawn	
DISCUSSION SUMMARY	
I called to determine the state of the emission dat Eastman DMT Plant. This data, plus reprinted state be sent shortly.	·

Summary of Regulations for Alabama

The following sections of Alabama's State regulations are applicable to DMT-TPA plants. These regulations were taken from the Environmental Reporter, State Air Laws, 5-253, and were last amended January 31, 1975. The Amoco Decatur Plant is in Morgan County.

Particulate Emissions

4.4 Process Industries - General.

4.4.1 Class 1 Counties: No person shall cause or permit the emission of particulate matter in any one hour from any source in a Class 1 county in excess of the amount shown in Table 4-2 for the process weight per hour allocated to such source. For sources in Class 1 counties, interpolation of the data in Table 4-2 for the process weight per hour values up to 60,000 lbs/hr shall be accomplished by use of the equation:

$$E = 3.59 P^{0.62}$$
 $P \le 30 \text{ tons/hr}$

and interpolation and exterpolation of the data for process weight per hour values equal to or in excess of 60,000 lbs/hr shall be accomplished by use of the equation:

$$P = 17.31 \text{ P}^{-0.16} \text{ P} \ge 30 \text{ tons/hr}$$

where:

E = Emissions in pounds per hour

P = Process weight per hour in tons per hour.

4.4.3 Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this Part, the interpretation that results in the minimum value for allowable emission shall apply.

4.4.4 For purposes of this Part, the total process weight from all similar process units at a plant or premises shall be used for determining the maximum allowable emission of particulate matter that passes through a stack or stacks.

4.4.5 New sources subject to this Part emitting particulate matter shall be subject to the rules and regulations for Class 1 counties, Section 4.4.1, regardless of their location.

"Particulate Matter" shall mean finely divided material, except uncombined water which is a liquid or solid at standard conditions of temperature at 70 degrees F and pressure at 14.7 pounds per square inch absolute.

"Process" shall mean any action, operation, or treatment of materials, including handling and storage thercof, which may cause discharge of an air contaminant, or contaminants, into the atmosphere, but excluding fuel burning and refuse burning.

"Process Weight" shall mean the total weight in pounds of all materials introduced into any specific process which may cause any discharge into the atmosphere.

"Process Weight Per Hour" shall mean the total weight of all materials introduced into any specific process that may cause any discharge of particulate matter. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. For a cyclical or batch operation, the process weight per hour will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour will be derived by dividing the process weight for a typical period of time by that time period.

TABLE 4-2 ALLOWABLE PARTICULATE MATTER EMISSION BASED ON PROCESS WEIGHT RATE

Process Weight Rate (lb/hr)	Allowable Emission Rate (lb/hr) Class 1 County
100	0.56
500	1.52
1,000	2.34
5,000	6.33
10,000	9.76
20,000	14.97
60,000	29.83
80,000	31.23
120,000	33.33
160,000	34.90
200,000	36.17
000,000	46.79

CHAPTER 6 - CONTROL OF HYDROCARBON EMISSIONS

- 6.1 Storage of Volatile Organic Materials.
- 6.1.1 No person shall place, store, or hold in any stationary tank reservoir or other container of more than 60,000 gallons capacity any volatile organic compounds unless such tank, reservoir, or other container is a pressure tank capable of maintaining working pressures sufficient at all times to prevent vapor or gas loss to the atmosphere or is designed, and equipped with one of the following vapor loss control devices:
- (a) A floating roof, consisting of a pontoon type, double deck type roof or internal floating cover, which will rest on the surface of the liquid contents and be equipped with a closure seal or seals to close the space between the roof edge and tank wall. This control equipment shall not be permitted if the volatile organic compounds have a vapor pressure of 11.0 pounds per square inch absolute (568 mm.Hg) or greater under actual storage conditions. All tank gauging or sampling devices shall be gas-tight except when tank gauging or sampling is taking place.
- (b) A vapor recovery system, consisting of a vapor gathering system capable of collecting the volatile organic compound vapors and gases discharged and a vapor disposal system capable of processing such volatile organic vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.
- (c) Other equipment or means of equal efficiency for purposes of air pollution control as may be approved by the Director.
- (d) No person shall place, store, or hold in any new stationary storage vessel more than 1,000-gallon capacity any volatile organic compound unless such vessel is equipped with a permanent submerged fill pipe or is a pressure tank as described in paragraph (a) above, or is fitted with a system as described in paragraph (b) above. Existing stationary storage vessels shall employ portable submerged fill pipes or be equipped with permanent submerged fill pipes.
- 6.1.2 This Part shall not apply to crude petroleum produced, separated, treated or stored in the field.
 - 6.2 Volatile Organic Materials Loading Facilities.
- 6.2.1 No person shall load any volatile organic compounds into any tank, truck or trailer from any terminal or bulk storage facility handling more than 50,000 gallons per day unless such terminal or facility is equipped with a

vapor collection and disposal system, or its equivalent, properly installed, in good working order, or has in operation a loading system which will result in a 95 per cent submerged fill either with a submerged fill pipe or by loading from the bottom.

- 6.2.2 No person shall load any volatile organic compounds into any tank, truck, or trailer having a capacity in excess of 200 gallons, unless such loading facility is equipped as set forth in Paragraph 6.2.1. Where the vapor collection and disposal system is utilized, the loading arm shall be equipped with a vapor collection adaptor, pneumatic, hydraulic, or other mechanical means which will provide a vapor-tight seal between the adaptor and the hatch. A means shall be provided to prevent liquid organic compounds drainage from the loading device when it is removed from the hatch of any tank, truck or trailer. When loading is effected through means other than the hatches, all loading lines shall be equipped with fittings which make vapor-tight connections and which close automatically when disconnected.
- 6.2.3 This Part shall not apply to crude petroleum produced, separated, treated or stored in the field.

6.3 Volatile Organic Compound Water Separation.

- 6.3.1 No person shall use any compartment of any single or multiple compartment volatile organic compound water separation which receives effluent water containing 1,000 gallons a day or more of any volatile organic compound from processing, refining, treating, storing, or handling volatile organic compounds unless such compartment is equipped with one of the following vapor loss control devices, properly installed, in good working order, and in operation.
- (a) A container having all openings sealed and totally enclosing the liquid contents. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.
- (b) A container equipped with a floating roof, consisting of a pontoon type, double deck type roof, or internal floating cover, which will rest on the surface of the contents and be equipped with a closure seal or seals to close the space between the roof edge and container wall. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.
- (c) A container equipped with a vapor recovery system consisting of a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all container gauging and sampling devices gas-tight except when gauging or sampling is taking place.
- (d) A container having other equipment of equal efficiency for purposes of air pollution control as may be approved by the Director.

Carbon Monoxide Emissions (TPA manufacture is not considered a petroleum process in Alabama)

CHAPTER 9

CONTROL OF CARBON MONOXIDE EMISSIONS

- 9.1 No person shall emit the carbon monoxide gases generated during the operation of a grey iron cupola, blast furnace, or basic oxygen steel furnace unless they are burned at 1,300°F for 0.3 seconds or greater in a direct-flame afterburner or equivalent device equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.
- 9.2 No person shall emit a carbon monoxide waste gas stream from any catalyst regeneration of a petroleum cracking system, petroleum fluid coker, or other petroleum process into the atmosphere, unless the waste gas stream is burned at 1,300°F for 0.3 seconds or greater in a direct-flame afterburner or boiler equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.

Summary of Regulations for Illinois

The following sections of Illinois' State regulations are applicable to DMT-TPA plants. These regulations were taken from:

State of Illinois Air Pollution Control Regulations Printed by Environmental Protection Agency January 1973

Particulate Emissions

Rule 203: Particulate Emission Standards and Limitations.

(a) Particulate Emission Standards and Limitations for New Process Emission Sources.

Except as further provided in this Rule 203, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission source which, either alone or in combination with the emission of particulate matter from all other similar new process emission sources at a plant or premises, exceeds the allowable emission rates specified in Table 2.1 and in Figure 2.1.

Table 2.1

Standards for New Process Emission Sources

		············	
Process Weight Ra Pounds Per Hour		Weight Rate Per Hour	Allowable Emission Rate Pounds Per Hour
100		0.05	0.55
200	•	0.10	0.77
400	•	0.20	1.10
600		0.30	1.35
800		0.40	1.58
1,000		0.50	1.75
1,500		0.75	2.40
2,000		1.00	2.60
4,000	·	2.00	3.70
6,000		3.00	4.60
8,000		4.00	5.35
10,000		5.00	6.00
20,000	:	10.00	8.70
30,000		15.00	10.80
40,000	2	20.00	12.50
50,000		25.00	14.00

Process Weight Rate Pounds Per Hour	Process Weight Rate Tons Per Hour	Allowable Emission Rate Pounds Per Hour
60,000	30.00	15.60
70,000	35.00	17.00
80,000	40.00	18.20
90,000	45.00	19.20
100,000	50.00	20.50
200,000	100.00	29.50
300,000	150.00	37.00
400,000	200.00	43.00
500,000	250.00	48.50
600,000	300.00	53.00
700,000	350.00	58.00
800,000	400.00	62.00
900,000	450.00	66.00
1,000,000	500.00	67.00

Interpolated and extrapolated (up to process weight rates of 450 tons per hour) values of the data in Table 2.1 shall be determined by using the equation:

$$E = 2.54 (P)^{0.534}$$

where:

E = allowable emission rate
 in pounds per hour;

and P = process weight rate in tons per hour.

Interpolated and extrapolated values of the data of Table 2.1 for process weight greater or equal to 450 tons per hour shall be determined using the equation:

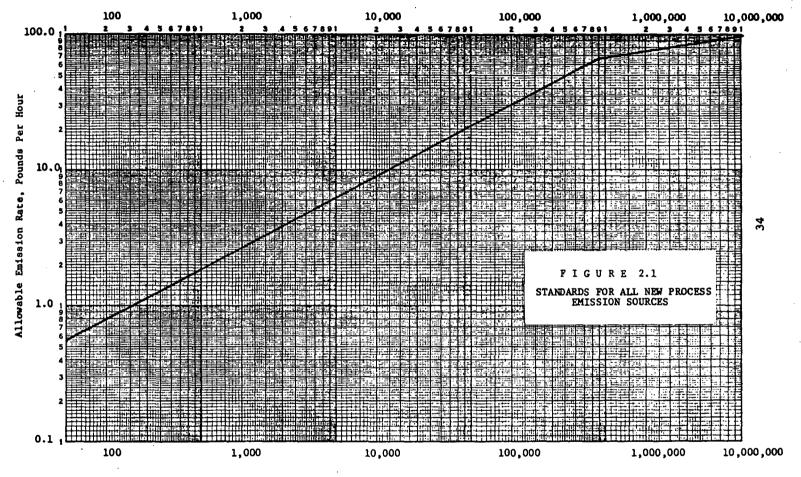
$$E = 24.8 (P)^{-0.16}$$

where:

E = allowable emission rate
 in pounds per hour.

and P = process weight rate in tons per hour.

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Process Weight Rate: Pounds Per Hour

DEFINITIONS:

Existing Emission Source: any emission source, the construction or modification of which has commenced prior to the effective date of this Chapter.

Existing Air Pollution Control Equipment: any air pollution control equipment, the construction or modification of which has commenced prior to the effective date of this Chapter.

New Air Pollution Control Equipment: any air pollution control equipment, the construction or modification of which is commenced on or after the effective date of this Chapter.

New Emission Source: any emission source, the construction or modification of which is commenced on or after the effective date of this Chapter.

Modification: any physical change in, or change in the method of operation, of an emission source or of air pollution control equipment which increases the amount of any specified air contaminant emitted by such source or equipment or which results in the emission of any specified air contaminant not previously emitted. It shall be presumed that an increase in the use of raw materials, the time of operation, or the rate of production will change the amount of any specified air contaminant emitted. Notwithstanding any other provisions of this definition, for purposes of permits issued pursuant to Rule 103, the Agency may specify conditions under which an emission source or air pollution control equipment may be operated without causing a modification as herein defined, and normal cyclical variations, before the date operating permits are required, shall not be considered modifications.

Process: Any stationary emission source other than a fuel combustion emission source or an incinerator.

Process Weight Rate: The actual weight or engineering approximation thereof of all materials except liquid and gaseous fuels and combustion air, introduced into any process per hour. For a cyclical or batch operation, the process weight rate shall be determined by dividing such actual weight or engineering approximation thereof by the number of hours of operation excluding any time during which the equipment is idle. For continuous processes, the process weight rate shall be determined by dividing such actual weight or engineering approximation thereof by the number of hours in one complete operation, excluding any time during which the equipment is idle.

(b) Particulate Emission Standards and Limitations for Existing Process Emission Sources.

Except as further provided in this Rule 203, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any existing process emission source which, either alone or in combination with the emission of particulate matter from all other similar new or existing process emission sources at a plant or premises, exceeds the allowable emission rates specified in Table 2.2 and in Figure 2.2.

Table 2.2

Standards for Existing Process Emission Sources

<u> </u>	OI BRIDDING IIOCCOD BILL	SOUL SOUL SEE
Process Weight Rate Pounds Per Hour	Process Weight Rate Tons Per Hour	Allowable Emission Rate Pounds per Hour
100	0.05	0.55
200	0.10	0.87
400	0.20	1.40
600	0.30	1.83
800	0.40	2.22
1,000	0.50	2.58
1,500	0.75	3.38
2,000	1.00	4.10
4,000	2.00	6.52
6,000	3.00	8.56
8,000	4.00	10.40
10,000	5.00	12.00
20,000	10.00	19.20
30,000	15.00	25.20
40,000	20.00	30.50
50,000	25.00	35.40

Process Weight Rate Pounds Per Hour	Process Weight Rate Tons Per Hour	Allowable Emission Rate Pounds Per Hour
60,000	30.00	40.00
70,000	35.00	41.30
80,000	40.00	42.50
90,000	45.00	43.60
100,000	50.00	44.60
200,000	100.00	51.20
300,000	150.00	55.40
400,000	200.00	58.60
500,000	250.00	61.00
600,000	300.00	63.10
700,000	350.00	64.90
800,000	400.00	66.20
900,000	450.00	67.70
1,000,000	500.00	69.00

Interpolated and extrapolated values of the data in Table 2.2 for process weight rates up to 30 tons per hour shall be determined by using the equation:

$$E = 4.10 (P)^{0.67}$$

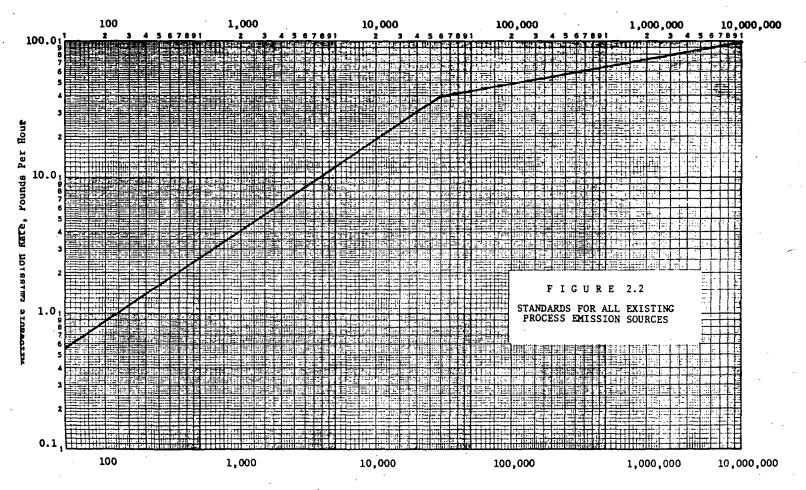
and interpolated and extrapolated values of the data for process weight rates in excess of 30 tons per hour shall be determined by using the equation:

$$E = [55.0 (P)^{0.11}] - 40.0$$

where:

E = allowable emission rate in pounds
 per hour,

and P = process weight rate in tons per hour.



Process Weight Rate: Pounds Per Hour

- (c) Compliance by Existing Process Emission Sources. Except as otherwise provided in this Rule 203, every existing process emission source that is not in compliance with paragraph (b) of this Rule 203 as of the effective date of Part 2 of this Chapter, shall comply with paragraph (a) of this Rule 203, unless both the following conditions are met:
 - (1) The source is in compliance, as of the effective date of Part 2 of this Chapter, with the terms and conditions of a variance granted by the Pollution Control Board, or, within sixty (60) days of the effective date of this Chapter, the source is the subject of a variance petition filed with the Pollution Control Board, which variance is subsequently granted by the Board; and,
 - (2) As of the effective date of Part 2 of this Chapter, construction has commenced on equipment or modifications sufficient to achieve compliance with paragraph (b) of this Rule 203.
- (d) Exceptions to Rules 203(a), 203(b) and 203(c).
 - (1) Catalyst Regenerators of Fluidized Catalytic Converters. Rules 203(a), 203(b) and 203(c) shall not apply to catalyst regenerators of fluidized catalytic converters. No person shall cause or allow the emission rate from new and existing catalyst regenerators of fluidized catalytic converters to exceed in any one hour period the rate determined using the following equations:

$$E = 4.10 (P)^{0.67}$$

for P less than or equal to 30 tons per hour.

$$E = [55.0 (P)^{0.11}] - 40$$

for P greater than 30 tons per hour.

where,

- E = allowable emission rate in pounds per hour.
- P = catalyst recycle rate, including the amount
 of fresh catalyst added, in tons per hour.

Carbon Monoxide Emissions

Rule 206: Carbon Monoxide Emission Standards and Limitations.

- (a) Fuel Combustion Emission Sources With Actual Heat Input Greater Than 10 Million Btu Per Hour. No person shall cause or allow the emission of carbon monoxide into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 million btu per hour to exceed 200 ppm, corrected to 50 per cent excess air.
- (b) Incinerators. No person shall cause or allow the emission of carbon monoxide into the atmosphere from any incinerator to exceed 500 ppm, corrected to 50 per cent excess air.

 Exception: This Rule 206(b) shall not apply to existing incinerators burning less than 2000 pounds of refuse per hour which are in compliance with Rule 203 (e)(3).
- (c) Petroleum and Petrochemical Processes. No person shall cause or allow the emission of a carbon monoxide waste gas stream into the atmosphere from a petroleum or petrochemical process unless such waste gas stream is burned in a direct flame afterburner or carbon monoxide boiler so that the resulting concentration of carbon monoxide in such waste gas stream is less than or equal to 200 ppm corrected to 50 per cent excess air, or such waste gas stream is controlled by other equivalent air pollution control equipment approved by the Agency according to the provisions of Part 1 of this Chapter.

Hydrocarbon Emissions

Rule 205: Organic Material Emission Standards and Limitations.

- ((a) Storage. No person shall cause or allow the storage of any volatile organic material in any stationary tank, reservoir or other container of more than 40,000 gallons capacity unless such tank, reservoir or other container:
 - (1) is a pressure tank capable of withstanding the vapor pressure of such materials, so as to prevent vapor or gas loss to the atmosphere at all times; or,
 - (2) is designed and equipped with one of the following vapor loss control devices:
 - (A) A floating roof which rests on the surface of the volatile organic material and is equipped with a closure seal or seals to close the space between the roof edge and the tank wall. Such floating roof shall not be permitted if the volatile organic material has a vapor pressure of 12.5 pounds per square inch absolute or greater at 70°F. No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tanks, except during sampling.
 - (B) A vapor recovery system consisting of:
 - (1) a vapor gathering system capable of collecting 85% or more of the uncontrolled volatile organic material that would be otherwise emitted to the atmosphere; and,
 - (ii) a vapor disposal system capable of processing such volatile organic material so as to prevent their emission to the atmosphere. No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tank, reservoir or other container except during sampling.
 - (C) Other equipment or means of equal efficiency approved by the Agency according to the provisions of Part 1 of this Chapter 3;

DEFINITION

Organic Material: Any chemical compound of carbon including diluents and thinners which are liquids at standard conditions and which are used as dissolvers, viscosity reducers or cleaning agents. but excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbonic acid, metallic carbonates, and ammonium carbonate.

Organic Vapor: Gaseous phase of an organic material or a mixture of organic materials present in the atmosphere.

(b) Loading. ORGANICS

- (1) "No person shall cause or allow the discharge of more than 8 pounds per hour of organic material into the atmosphere during the loading of any organic material from the aggregate loading pipes of any loading facility have a throughput of greater than 40,000 gallons per day into any railroad tank car, tank truck or trailer unless such loading facility is equipped with submerged loading pipes or a device that is equally effective in controlling emissions and is approved by the Agency according to the provisions of Part I of this Chapter."
- (2) No person shall cause or allow the loading of any organic material into any stationary tank having a storage capacity of greater than 250 gallons, unless such tank is equipped with a permanent submerged loading pipe or an equivalent device approved by the Agency according to the provisions of Part 1 of this Chapter, or unless such tank is a pressure tank as described in Rule 205(z)(1) or is fitted with a recovery system as described in Rule 205(a)(2)(B).
- (3) Exception: If no odor nuisance exists the limitations of subparagraph (b) of this Rule 204 shall only apply to volatile organic material.

(c) Organic Material-Water Separation.

(1) No person shall use any single or multiple compartment effluent water separator which receives effluent water containing 200 gallons a day or more of organic material from any equipment processing, refining, treating, storing, or handling organic material unless such effluent water separator is equipped with air pollution control equipment capable of reducing by 85 per cent or more the uncontrolled organic material emitted to the atmosphere.

Exception: If no odor nuisance exists the limitations of this Rule 205(c)(1) shall only apply to volatile organic material.

DEFINITION

Submerged Loading Pipe: Any loading pipe the discharge opening of which is entirely submerged when the liquid level of six inches above the bottom of the tank. When applied to a tank which is loaded from the side, any loading pipe the discharge of which is entirely submerged when the liquid level is 18 inches or two times the loading pipe diameter, whichever is greater, above the bottom of the tank. This definition shall also apply to any loading pipe which is continuously submerged during loading operations.

<u>Effluent Water Separator</u>: Any tank, box, sump, or other apparatus in which any organic material floating on or entrained or contained in water entering such tank, box, sump, or other apparatus is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.

Splash Loading: A method of loading a tank, railroad tank car, tank truck or trailer by use of other than a submerged loading pipe.

- (d) Pumps and Compressors. No person shall cause or allow the discharge of more than two cubic inches of liquid volatile organic material into the atmosphere from any pump or compressor in any 15 minute period at standard conditions.
- (f) Use of Organic Material. No person shall cause or allow the discharge of more than 8 pounds per hour of organic material into the atmosphere from any emission source, except as provided in paragraphs (f)(1) and (f)(2) of this Rule 205 and the following: Exception: If no odor nuisance exists the limitation of this Rule 205(f) shall apply only to photochemically reactive material.
 - (1) Alerantive Standard. Emissions of organic material in excess of those permitted by Rule 205(f) are allowable if such emissions are controlled by one of the following methods:
 - (A) flame, thermal or catalytic incineration so as neither to reduce such emissions to 10 ppm equivalent methane (molecular weight 16) or less, or to convert 85 per cent of the hydrocarbons to carbon dioxide and water; or,
 - (B) a vapor recovery system which adsorbs and/or absorbs and/or condenses at least 85 per cent of the total uncontrolled organic material that would otherwise be emitted to the atmosphere; or,
 - (C) any other air pollution control equipment approved by the Agency capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere.

DEFINITION

Photochemically Reactive Material: Any organic material with an aggregate of more than 20 per cent of its total volume composed of the chemical compounds classified below or the composition of which exceeds any of the following individual percentage composition limitations:

- (1) A combination of hydrocarbons, alcohols, aldehydes, esters, either or ketones having an olefinic or cyclo-olefinic type of unsaturation: 5 per cent. This definition does not apply to perchloroethylene or trichloroethylene.
- (2) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 per cent.

(3) A combination of ethylbenzene, ketones having branched hydrocarbon structures or toluene: 20 per cent.

Whenever any photochemically reactive material or any constituent of any organic material may be classified from its chemical structure into more than one of the above groups of organic materials numbered (1), (2), (3), it shall be considered as a member of the most reactive group, that is, that group having the least allowable per cent of the total organic materials.

(g) Waste Gas Disposal.

- (1) Petroleum Refinery and Petrochemical Manufacturing
 Process Emissions. No person shall cause or allow
 the discharge of organic materials into the atmosphere
 from:
 - (A) any catalyst regenerator of a petroleum cracking system; or,
 - (B) any petroleum fluid coker; or,
 - (C) any other waste gas stream from any petroleum or petrochemical manufacturing process; in excess of 100 ppm equivalent methane molecular weight 16.0
- (2) Vapor Blowdown. No person shall cause or allow the emission of organic material into the atmosphere from any vapor blowdown system or any safety relief valve, except such safety relief valves not capable of causing an excessive release, unless such emission is controlled:
 - (A) to 10 ppm equivalent methane (moleuclar weight 16.0) or less; or,
 - (B) by combustion in a smokeless flare; or,
 - (C) by other air pollution control equipment approved by the Agency according to the provisions of Part 1 of this Chapter.

DEFINITION

Unregulated Safety Relief Valve: A safety relief valve which cannot be actuated by a means other than high pressure in the pipe or vessel which it protects.

Volatile Organic Material: Any organic material which has a vapor pressure of 2.5 pounds per square inch absolute (psia) or greater at 70° .

Smokeless Flare: A combustion unit and the stack to which it is affixed in which organic material achieves combustion by burning in the atmosphere such that the smoke or other particulate matter emitted to the atmosphere from such combustion does not have an appearance, density, or shade darker than No. 1 of the Ringelmann Chart.

Stack: A flue or conduit, free-standing or with exhaust port above the roof of the building on which it is mounted, by which air contaminants are emitted into the atmosphere.

- Standard Conditions: A temperature of 70°F and a pressure of 14.7 pounds per square inch absolute (psia).
 - (3) Sets of Unregulated Safety Relief Valves Capable of Causing Excessive Releases. Rule 205(g)(2) shall not apply to any set of unregulated safety relief valves capable of causing excessive releases, provided that the owner or operator thereof, by October 1, 1972, provides the Agency with the following.
 - (A) an historical record of each such set (or, if such records are unavailable, of similar sets which, by virtue of operation under similar circumstances, may reasonably be presumed to have the same or greater frequency of excessive releases) for a three-year period immediately preceding October 1, 1972, indicating:
 - (1) dates on which excessive releases occurred from each such set; and,
 - (11) duration in minutes of each such excessive release; and;
 - (iii)quantities (in pounds) of mercaptans and/or hydrogen sulfide emitted into the atmosphere during each such excessive release.
 - (B) proof, using such three-year historical records, that no excessive release is likely to occur from any such set either alone or in combination with such excessive releases from other sets owned or operated by the same person and located within a ten-mile radius from the center point of any such set, more frequently than 3 times in any 12 month period; and
 - (C) accurate maintenance records pursuant to the requirements of paragraph (g)(3)(A) of this Rule 205 of this Chapter; and
 - (D) proof, at three-year intervals, using such three-year historical records, that such set conforms to the requirement of paragraph (g)(3)(C) of this Rule 205.
 - (h) Emissions During Clean-up Operations and Organic Material Disposal. Emissions of organic material released during clean-up operations and disposal shall be included with other emissions of organic material from the related emission source or air pollution control equipment determining total emissions.

Summary of Regulations for North Carolina

The following sections of North Carolina's State regulations are applicable to DMT-TPA plants. These regulations were taken from the Environmental Reporter, State Air Laws, 5-217, and were last updated March 21, 1974.

Particulate Emissions

2.30 Control and Prohibition of Particulate Emissions From Miscellaneous Industrial Processes

No person shall cause, suffer, allow, or permit particulate matter caused by industrial processes for which no other emission control standards are applicable to be discharged from any stack or chimney into the atmosphere in excess of the rates shown in Table I.

Process weight per hour means the total weight of all materials introduced into any specific process that may cause any emission of particulate matter Solid fuels charged are considered as part of the process weight, but liquid and gaseous fuels and combustion air are not. For a cyclical or batch operation, the process weight per hour is derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour is derived by dividing the process weight for a typical period of time.

ALLOWABLE RATE OF EMISSION BASED ON ACTUAL PROCESS VEIGHT RATE

Process Weight Rate		Rate of Emission	Proce	Rate of Emission	
Lb/iir	Ton/Hr	Lb/Hr	Lb/4r	Tons/Hr	Lb/Hr
100	0.05	0.551	16,000	8	16.5
200	0.10	0.877	18,000	9	17.9
400	0.20	1.40	20,000	10.	19.2
600	0.30	1.83	30,000	15	25.2
800	0.40	2.22	40,000	.20	30.5
1,000	0.50	2.58	50,000	2 5	35.4
1,500	0.75	3.38	60,000	30	40.0
2,000	1.00	4.10	70,000	35	41.3
2,500	1.25	4.76	80,000	40	42.5
3,000	1.50	5.38	90,000	45	43.6
3,500	1.75	5.96	100,000	50	44.6
4,000	2.00	6.52	120,000	60	46.3
5,000	2.50	7. 58	140,000	70	47.8
6,000	3.00	8.56	160,000	80	49.0
7,000	3.50	9.49	200,000	100	51.2
8,000	4.00	10.4	1,000,000	500	69.0
9,000	4.50	11.2	2,000,000	1,000	77.6
10,000	5.00	12.0	6,000,000	3,000	92.7
12,000	6.00	13.6	2.31 This : July 1, 1971.	standard shall be effect	tive from and after

Interpolation of the data in this table for process weight rates up to 60,000 lb/hr shall be accomplished by use of the equation E = 4.10 Po. 67, and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr shall be accomplished by use or the equation:

 $E = (55.0 \text{ P}^{\circ}. 11) - 40$ Where E = Rate of Emission in 1b/hr and

P = Process Weight rate in tons/hr.

2.60 Control of Hydrocarbon Emissions From Stationary Sources

No person shall place, store or hold in any stationary tank, reservoir or other container of more than 50,000 gallons capacity any liquid compound containing carbon and hydrogen or containing carbon and hydrogen in combination with any other element which has a vapor pressure of 1.5 pounds per square inch absolute or greater under actual storage conditions unless such tank, reservoir or other container is a pressure tank capable of maintaining working pressures sufficient at all times to prevent vapor or gas loss to the atomsphere or is designed and equipped with one of the following vapor loss control devices:

(a) A floating pontoon or double deck type cover equipped with closure seals to enclose any space between the cover's edge and compartment wall. This control equipment shall not be permitted if the compound is a photochemically reactive material having a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging or sampling devices shall be gas-tight except when tank gauging or sampling is taking place.

(b) A vapor recovery system which reduces the emission of organic materials into the atmosphere by at least 90 percent by weight. All tank gauging or sampling devices shall be gas-tight except when tank gauging or

sampling is taking place.

(c) Other equipment or means of equal efficiency for purposes of air pollution control as may be approved by

the Board.

2.61 No person shall load in any one day more than 20,000 gallons of any volatile organic compound into any tank-truck, trailer, or railroad tank car from any loading facility unless such loading incorporates the use of submerged loading through boom loaders that extend down into the compartment being loaded or by other methods acceptable to the Board.

2.62 No person shall discharge at any one site more than 40 pounds of organic material into the atmosphere in any one day, from any article, machine, equipment, or other contrivance used for employing, applying, evaporating or drying any photochemically reactive material or substance containing such solvent unless said discharge has been reduced by 85 percent. Such photochemically reactive solvents include any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following percentage composition limitations, referred to the total volume of the solvent.

(a) A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones, having an olefinic or cyclo-olefinic type of unsaturation: 5 percent;

(b) A combination of aromatic hydrocarbons with eight (8) or more carbon atoms to the molecule except

ethylbenzene: 8 percent;

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structure, trichloroethylene or toluene: 20 percent.

Whenever any organic solvent or any constituent of any organic solvent may be classified from its chemical structure into more than one of the above groups of organic compounds, it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

2.63 This regulation shall be effective from and after July 1, 1972.

Section III - Ambient Air Quality Standards

1.0 Purpose

It is the purpose of the following ambient air quality standards to establish certain maximum limits on parameters of air quality considered desirable for the preservation and enhancement of the quality of the State's air resources. Furthermore, it shall be the objective of the Board, consistent with the North Carolina Air Pollution Control Law, to prevent significant deterioration in ambient air quality in any substantial portion of the State where existing air quality is better than the standards. An atmosphere in which these standards are not exceeded should provide for the protection of the public health, plant and animal life and property.

Ground level concentration of pollutants will be determined by sampling at fixed locations in areas beyond the premises on which a source is located. The standards are applicable at each such sampling location in the State.

1.10 Sulfur Dioxide

The ambient air quality standards for sulfur oxides measured as sulfur dioxide are:

- (a) 60 micrograms per cubic meter annual arithmetic mean.
- (b) 260 micrograms per cubic meter maximum 24-hour concentration not to be exceeded more than once per year.
- (c) 1300 micrograms per cubic meter maximum 3-hour concentration not to be exceeded more than once per year.

1.11 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

1.20 Suspended Particulates

The ambient air quality standards for suspended particulate matter are:

- (a) 60 micrograms per cubic meter annual geometric
- (b) 150 micrograms per cubic meter maximum 24-hour concentration not to be exceeded more than once per year.

1.21 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

1.30 Carbon Monoxide

The ambient air quality standards for carbon monoxide are:

- (a) 10 milligrams per cubic meter maximum 8-hour concentration not to be exceeded more than once per year.
- (b) 40 milligrams per cubic meter maximum 1-hour concentration not to be exceeded more than once per year.

1.31 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

1.40 Photochemical Oxidants

The ambient air quality standards for photochemical oxidants measured and corrected for interferences due to nitrogen oxides and sulfur dioxide is:

(a) 160 micrograms per cubic meter maximum 1-hour concentration not to be exceeded more than once per year.

1.41 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

1.50 Hydrocarbons

The ambient air quality standard for hydrocarbons measured and corrected for methane is:

(a) 160 micrograms per cubic meter maximum 3-hour concentration (6:00 to 9:00 a.m.) not to be exceeded more than once per year. This standard is a guide for use in devising plans to achieve oxidant standards.

1.51 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

1.60 Nitrogen Dioxide

The ambient air quality standards for nitrogen dioxide

- (a) 250 micrograms per cubic meter maximum 24-hour concentration not to be exceeded more than once per year.
- (b) 100 micrograms per cubic meter annual arithmetic mean.

1.61 Sampling and Analysis

Sampling and analysis shall be in accordance with procedures published on April 30, 1971, in the Federal Register, Volume 36, No. 84.

Summary of Regulations for South Carolina

The following sections of South Carolina's State regulations are applicable to DMT-TPA plants. These regulations were taken from Regulation EC-2, adopted by S.C. Board of Health and Environmental Control on March 25, 1975 and filed with the Secretary of State on March 26, 1975. These regulations are available from:

South Carolina Department of Health and Environmental Control SIMS Building Columbia, South Carolina 29201

Particulate Emissions

SECTION VII

OTHER PROCESS INDUSTRIES

- A. The particulate emissions from all other process industries shall be limited to the rate specified in Table A for the process weight rate allocated to such process, and modified using the effect factors of Table B.
- B. Interpolation of the data in this table for process weights up to 30 tons per hour shall be accomplished by use of the equation:

$$E - 4.10 P^{0.67}$$

And interpolation and extrapolation of the data for process weight rates greater than 30 tons per hour shall be accomplished by using the equation:

$$E = 55.0 P^{0.11} - 40$$

where E = the allowable emission rate in pounds per hour, and P = process weight rate in tons per hour.

TABLE A

ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE

PROCESS WEIGHT	RATE OF	PROCESS WEIGHT	RATE OF
RATE	EMISSION	RATE	EMISSION
(Tons/Hour)	(Pounds/Hour)	(Tons/Hour)	(Pounds/Hour)
0.05	0.551	8	16.5
0.10	0.877	9	17.9
0.20	1.40	10	19.2
0.30	1.83	15	25.2
6.40	2.22	20	30.5
0.50	2.58	25	35.4
0.75	3.38	30	40.0
1,00	4.10	35	41.3
1.25	1.76	40	42.5
1.50	5.38	45	43.6
1.75	5,96	50	44.6
~ 2.00	6.52	60	46.3
2.50	7.58	70	47.8
3.00	8.56	80	49.0
3.50	9,49	100	51.2
4.00	10.4	500	69.0
4.50	11.2	1,000	77.6
5.00	12.0	3,000	92.7

DEFINITION

<u>Process Weight</u> - The total weight of all materials introduced into a source operation, including solid fuels, but excluding liquids and gases used solely as fuels, and excluding air introduced for combustion and other purposes.

Process Weight Rate - A rate established as follows:

- (a) For continuous or long-run steady-state source operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.
- (b) For cyclical or batch unit operations, or unit processes, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this definition, the interpretation that results in the minimum value for allowable emission shall apply.

Summary of Regulations for Tennessee

The following sections of Tennessee's state regulations are applicable to DMT-TPA plants. These regulations were taken from <u>Tennessee Air</u> Pollution Control Regulations available from,

Air Pollution Control Board 727 Cordell Hull Building Nashville, Tennessee 37219

Particulate Emissions

CHAPTER VII

PROCESS EMISSION STANDARDS

SECTION 1 -- GENERAL PROCESS PARTICULATE EMISSION STANDARDS

- A. No person shall cause, suffer, allow or permit particulate emissions in excess of the standards in this Chapter.
- B. In any county where one or more sources are emitting particulates at rates in conformity with applicable maximum allowable emission rates and the ambient air quality standard for particulate matter is being exceeded, the Board shall be responsible for setting an appropriate emission standard for each source contributing to the particulate matter in the ambient air of the county, at such value as the Board may consider necessary to achieve the desired air quality.
- C. The owner or operator of an existing process emission source proposing to make a modification of this source or to rebuild or to replace it shall only take such action if it will result in the source meeting the maximum allowable particulate emission standard for a new process emission source.

SECTION 2 -- CHOICE OF PARTICULATE EMISSION STANDARDS EXISTING PROCESSES

- A. For any process emission source operating within the State of Tennessee, which was in operation or under construction prior to August 9, 1969, the allowable emission standard shall be obtained from either the diffusion equations presented in Section 2 (c) below or the process weight table presented in Section 2 (D) below. The owner or operator of such a process emission source shall make known, in writing, to the Technical Secretary by July 1, 1972, his choice of emission standard. If no choice is so indicated, the Technical Secretary shall designate the emission standard of Section 2 (D) below as the applicable standard. The emission standard chosen, either by the owner or operator or by the Technical Secretary, must be attained on or before August 9, 1973.
- B. For any process emission source operating within the State of Tennessee, construction of which began on or after August 9, 1969, and before the effective date of these regulations, the allowable emission standard shall be the diffusion equations presented in Section 2 (C) This standard must have been attained at the time such process emission source first commenced opera-The owner or operator of such a source shall. make known in writing to the Technical Secretary by July 1, 1972, whether he wishes to continue under the diffusion equations standard or to switch to the process weight table standard presented in Section 2 (D). If no choice is so indicated, the Technical Secretary shall designate the emission standard of Section 2 (D) below as the applicable standard. If the process weight table standard is chosen by such owner or operator or by the Technical Secretary, then such owner or operator shall have until August 9, 1973, to convert fully to the process weight table standard. It is expressly stipulated that in the interim period such a process emission source shall continue to observe the diffusion equations standard originally applicable.
- C. For those owners or operators of process emission sources who elect to have their process emissions regulated by diffusion equations, the maximum allowable particulate emissions from such sources shall be determined by the procedures defined in (1),(2) and (3) below.

1. Stack gas exit temperature less than 100° F (See Note)

$$Q = 3.02 \times 10^{-4} V_s h_s^2 \begin{bmatrix} d \\ s \\ h_s \end{bmatrix} 0.71$$

- Stack gas exit temperature of 125^o F or greater (See Note)
 - a. Stacks less than 500 feet

$$Q = 0.2h_s [Q_T \times 0.02 \times (T_s - 60)]^{0.25}$$

b. Stacks 500 feet and greater

$$Q = 0.3h_s [Q_T \times 0.02 \times (T_s - 60)]^{0.25}$$

For stack gas exit temperatures from 100° F to 124° F calculate allowable emission as in 1 and either 2a or 2b depending upon stack height (using T_S of 125° F) and make linear interpolation based upon actual stack gas exit temperature.

The terms of the preceding equations shall have the following meaning and units:

- d_s- inside diameter or equivalent diameter
 of stack tip in feet
- hs- stack height in feet (Vertical distance above grade directly below tip of stack)
- Q maximum allowable emission rate in pounds per hour
- $\mathbf{Q_{T}^{-}}$ volume rate of stack gas flow in cubic feet per second calculated to $60^{\circ}\mathrm{F}$
- T_s temperature of stack gases at stack tip in 0F
- V_s- velocity of stack gases at stack tip in feet per second
- Note: In determining applicability of equations in this subsection based upon exit gas temperature the actual exit gas temperature must equal or exceed the stated temperature during ninety (90) percent or more of the operating time.

- D. For those owners or operators of process emission sources who elect to have their process emissions regulated by the Process Weight Table, the maximum allowable particulate emissions from a process emission source shall be determined by Table 1.
- E. Whichever standard is chosen, all sources at the same facility must be regulated by that standard.

SECTION 3 -- NEW PROCESSES

The allowable emission level of particulate matter from any process emission source beginning operation on or after the effective date of this regulation shall be determined by Table 2.

SECTION 4 -- LIMITING ALLOWABLE EMISSIONS

- A. Irrespective of the maximum allowable emission as determined by any of the preceding equations or Process Weight Tables in this Chapter, the concentration of particulate process emissions shall not be required to be less than 0.02 grain per cubic foot of stack gases corrected to 70°F and 1 atmosphere unless a lesser concentration is found by the Board to be necessary.
- B. Irrespective of the maximum allowable emission as determined by any of the preceding equations or Process Weight Tables in this Chapter the maximum allowable concentration of particulate process emissions shall be 0.25 grains per cubic foot of stack gases corrected to 70°F and 1 atmosphere. This shall be achieved by all air contaminant sources on or before August 9, 1973. Air contaminant sources constructed after August 9, 1969, shall meet the above emission standard when they commence operation.

SECTION 5 -- SPECIFIC PROCESS EMISSION STANDARDS

The emission limits set forth in Sections 2,3, or 4 will apply unless a specific process emission standard for a specifically designated type of process emission source is contained in a subsequent Section of this Chapter.

Table 1. EXISTING PROCESS EMISSION SOURCES ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE^a

Process ra	·, -	Rate of emission	Process weight rate		Rate of emission
lb/hr	tons/hr	lb/hr	lb/hr	tons/hr	lb/hr
100	0.05	0.551	16,000	8.00	16.5
200	0.10	0.877	18,000	9.00	17.9
400	0.20	1.40	20,000	10.	19.2
600	0.30	1.83	30,000	15.	25.2
800	0.40	2.22	40,000	20.	30.5
1,000	0.50	2.58	50,000	25.	35.4
1,500	0.75	3.38	60,000	30.	40.0
2,000	1.00	4.10	70,000	35.	41.3
2,500	1.25	4.76	80,000	40.	42.5
3,000	1.50	5.38	90,000	45.	43.6
3,500	1.75	5.96	100,000	50.	44.6
4,000	2.00	6.52	120,000	60.	46.3
5,000	2.50	7.58	140,000	70.	47.8
6,000	3.00	8.56	160,000	80.	49.0
7,000	3.50	9.49	200,000	100.	51.2
8,000	4.00	10.4	1,000,000	500.	69.0
9,000	4.50	11.2	2,000,000	1,000.	77.6
10,000	5.00	12.0	6,000,000	3,000.	92.7
12,000	6.00	13.6			

^aInterpolation of the data in this table for process weight rates up to 60,000 lb/hr shall be accomplished by use of the equation $E = 4.10 \ P^{0.67}$ and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr shall be accomplished by use of the equation:

 $E = 55.0 \text{ p}^{0.11} - 40$, where E = rate of emission in 1b/hr and P = process weight rate in tons/hr.

Table 2. NEW PROCESS EMISSION SOURCES ALLOWABLE RATE OF EMISSION BASED ON PROCESS WEIGHT RATE^a

	weight te	Rate of emission	Process weight rate		Rate of emission
lb/hr	tons/hr	lb/hr	lb/hr	tons/hr	1b/hr
50	0.025	0.03	16,000	8.00	13.0
100	0.05	0.55	18,000	9.00	14.0
200	0.10	0.86	20,000	10.	15.0
400	0.20	1.32			
600	0.30	1.70	30,000	15.	19.2
800	0.40	2.03	40,000	20.	23.0
1,000	0.50	2.34	50,000	25.	26.4
1,500	0.75	3.00	60,000	30.	29.6
2,000	1.00	3.59	70,000	35.	30.6
2,500	1.25	4.12	80,000	40.	31.2
3,000	1.50	4.62	90,000	45.	31.8
3,500	1.75	5.08	100,000	50.	32.4
4,000	2.00	5.52	120,000	60.	33.3
5,000	2.50	6.34	140,000	70.	34.2
6,000	3.00	7.09	160,000	80.	34.9
7,000	3.50	7.81	200,000	100.	36.1
8,000	4.00	8.5	1,000,000	500.	46.7
9,000	4.50	9.1	,,	500.	
10,000	5.00	9.7			
12,000	6.00	10.9			

^aInterpolation of the data in Table 2 for the process weight rates up to 60,000 lbs/hr shall be accomplished by the use of the equation:

$$E = 3.59 \text{ p}^{0.62} \text{ P} \leq 30 \text{ tons/hr}$$

and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lbs/hr shall be accomplished by use of the equation:

$$E = 17.31 \text{ p}^{0.16} \text{ p} > 30 \text{ tons/hr}$$

Where: E = emissions in pounds per hour
P = process weighr rate in tons per hour

General Emissions

Section 3 - - Standards

Table 1. TENNESSEE AMBIENT AIR QUALITY STANDARDS FOR SUSPENDED PARTICULATES SULFUR DIOXIDE, CARBON MONOXIDE, PHOTO-CHEMICAL OXIDANTS, NONMETHANE HYDROCARBONS AND NITRO-GEN DIOXIDE

Contaminants	Primary Standard Concentration Average		Secondary Standard			
			Average	Concentration		Average
	ug/m	ppm by vol.	Interval	ug/m ³	ppm by vol.	Interval
Suspended Particulates	75 2 60		AGM 24 hr.	60 150		AGM . 24 hr.
Sulfur Dioxide	80 365	0.03 0.14	AAM 24 hr.	60 364 1300	0.02 0.139 0.5	AAM 24 hr. 3 hr.
Carbon Monoxide	10,000 40,000	9.0 35.0	8 hr. 1 hr.	10,000 40,000	9.0 35.0	8 hr. 1 hr.
Photo- Chemical Oxidant	160	0.08	1 hr.	160	0.08	1 hr.
Hydro- Carbons (non- methane)	160	0.24	3 hr. a.m.	160	0.24	3 hr a.m.
Nitrogen Dioxide	100	0.05	A AI4	100	0,05	AAM

- Note: 1. All values other than annual values are maximum concentrations not to be exceeded more than once per year.
 - 2. PPM values are approximate only.
 - 3. All concentrations relate to air at standard conditions of $25^{\circ}\mathrm{C}$ temperature and 760 millimeters of mercury pressure.
 - 4. ug/m micrograms per cubic meter .
 - 5. AGM Annual geometric mean.
 - 6. AAM Annual arithmetic mean.