

# EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Nos. 19168 and PSD-TX-760M4

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

## AIR CONTAMINANTS DATA

Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lb/hr	TPY
1001	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1002	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1003	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1004	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1005	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71

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AIR CONTAMINANTS DATA

Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1006	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
1007	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1008	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70
1009B	Pyrolysis Furnace	VOC	0.70	3.00
		NO <sub>x</sub>	30.30	132.71
		CO	8.20	35.92
		TSP	0.50	2.20
		SO <sub>2</sub>	0.38	1.70

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For the Pyrolysis Furnaces, Emission Point Nos. (EPNs) 1054-1062 and 1091, annual allowables (TPY) are listed as a total estimated from the sum of estimated annual emissions from all ten furnaces. Short-term allowables (lb./hr.) are listed for each furnace.

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1054-1062, 1091	Pyrolysis Furnaces	VOC	26.59
		NO <sub>x</sub>	720.52
		CO	319.02
		TSP	18.99
		SO <sub>2</sub>	14.11
1054	Pyrolysis Furnace	VOC	0.71
		NO <sub>x</sub>	19.29
		CO	8.54
		TSP	0.51

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
		SO <sub>2</sub>	0.38	
1055	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1056	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1057	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1058	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1059	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	

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Emission *	Source	Air Contaminant	Emission Rates	
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
1060	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1061	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1062	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
1091	Pyrolysis Furnace	VOC	0.71	
		NO <sub>x</sub>	19.29	
		CO	8.54	
		TSP	0.51	
		SO <sub>2</sub>	0.38	
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1009	Decoke Drum (5)	CO	34.62	14.00
		TSP	3.20	1.30
1063	Decoke Drum (5)	CO	34.62	15.39
		TSP	3.18	1.41

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Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	<u>Emission Rates</u>	
			<u>lb/hr</u>	<u>TPY</u>
1064	Cooling Tower Fugitives (4) 19.29	VOC	4.40	
		BZ	0.53	2.31
1010	Cooling Tower	VOC	5.29	23.19
		BZ	0.17	0.73
1011	CPI Oil/Water Separator	VOC	2.76	12.09
		BZ	0.64	2.78
1065	CPI Oil/Water Separator	VOC	2.76	12.09
		BZ	0.64	2.78
1012	MAPD Regenerator 3418F	CO	17.30	0.01
1066	MAPD Regenerator	CO	17.28	0.01
1067	Elevated Flare	VOC	7.55	33.07
		NO <sub>x</sub>	1.92	8.39
		CO	13.84	60.61
		SO <sub>2</sub>	0.01	0.02
1015	Raw Condensate Tank 6402F	VOC	2.21	4.60
		BZ	0.02	0.04
1017	Methanol Tank 3416F	VOC	0.65	0.02
1018	Olefins Plant Flare (6)	VOC	0.026	0.010
		NO <sub>x</sub>	0.003	0.001
		CO	0.018	0.007
		SO <sub>2</sub>	0.05	0.02
1018	Olefins Plant Flare (7)	VOC	1.76	0.42
		CO	12.97	42.32
		NO <sub>x</sub>	1.90	8.30

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Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	<u>Emission Rates</u>	
			<u>lb/hr</u>	<u>TPY</u>
		SO <sub>2</sub>	0.05	0.02
1019	Fugitives (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1020	Naphtha Tank 6401F	VOC	8.69	18.41
		BZ	0.07	0.15
1028	Fugitives - A (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1029	Fugitives - B (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1030	Fugitives - C (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1031	Fugitives - D (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1032	Fugitives - E (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1033	Fugitives - F (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1034	Fugitives - G (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1035	Fugitives - H (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1036	Fugitives - I (4)	VOC	0.72	3.16

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Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	<u>Emission Rates</u>	
			<u>lb/hr</u>	<u>TPY</u>
		BZ	0.02	0.10
1037	Fugitives - J (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1038	Fugitives - K (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1039	Fugitives - L (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1040	Fugitives - M (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1041	Fugitives - N (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1042	Fugitives - O (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1043	Fugitives - P (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1044	Fugitives - Q (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1045	Fugitives - R (4)	VOC	0.72	3.16
		BZ	0.02	0.10
1068	Fugitives - A (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1069	Fugitives - B (4)	VOC	1.76	7.70
		BZ	0.02	0.10



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Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	<u>Emission Rates</u>	
			<u>lb/hr</u>	<u>TPY</u>
1070	Fugitives - C (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1071	Fugitives - D (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1072	Fugitives - E (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1073	Fugitives - F (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1074	Fugitives - G (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1075	Fugitives - H (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1076	Fugitives - I (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1077	Fugitives - J (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1078	Fugitives - K (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1079	Fugitives - L (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1080	Fugitives - M (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1081	Fugitives - N (4)	VOC	1.76	7.70
		BZ	0.02	0.10

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
1082	Fugitives - O (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1083	Fugitives - P (4)	VOC	1.76	7.70
		BZ	0.02	0.10
1085	Pyrolysis Fuel Oil Tank 6499FA	VOC	2.07	1.23
1086	Pyrolysis Fuel Oil Tank 6499FB	VOC	2.07	1.23
1087	Tank Flare	VOC	0.14	0.51
		NO <sub>x</sub>	1.45	6.34
		CO	12.42	54.38
		SO <sub>2</sub>	0.02	0.08
		BZ	0.10	0.43
1088	Wash Oil Day Tank 2410F	VOC	2.60	0.10
1089	Slop Oil Tank 7408F	VOC	2.54	0.03
1090	H <sub>2</sub> SO <sub>4</sub> Tank	H <sub>2</sub> SO <sub>4</sub>	<0.01	<0.01
1092	Olefins I Fugitives - U(4) 1.41	VOC		0.32
		BZ	0.01	0.03
1046	Reboiler No. 1	VOC	0.08	0.36
		NO <sub>x</sub>	1.82	7.97
		CO	1.02	4.47

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## AIR CONTAMINANTS DATA

Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lb/hr	TPY
		TSP	0.03	0.13
		SO <sub>2</sub>	0.02	0.10
1047	Reboiler No. 2	VOC	0.08	0.36
		NO <sub>x</sub>	1.82	7.97
		CO	1.02	4.47
		TSP	0.03	0.13
		SO <sub>2</sub>	0.02	0.10
1048	Slop Oil Tank 7408F	VOC	0.54	0.07
1049	Fugitives - T (4)	VOC	0.16	0.70
		BZ	<0.01	0.02
1050	H <sub>2</sub> SO <sub>4</sub> Tank	H <sub>2</sub> SO <sub>4</sub>	<0.01	<0.01
1051	Tank Flare	VOC	0.21	0.43
		NO <sub>x</sub>	1.35	0.04
		CO	11.50	0.31
		TSP	0.07	<0.01
		BZ	0.02	0.04
PPUFUG-1	PPU Unloading Station Fugitives (4)	VOC	0.47	2.04
PPUFUG-2	PPU Process Area Fugitives (4)	VOC	0.62	2.72
PPUFUG-3	PPU Storage Spheres Area Fugitives (4)	VOC	0.19	0.82
8001B	Regeneration Heater	NO <sub>x</sub>	0.66	0.14
		CO	0.67	0.15
		SO <sub>2</sub>	0.01	<0.01
		VOC	0.03	0.01

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Emission * Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lb/hr	TPY
		PM	0.15	0.03
8002B	Second Stage Feed Heater	NO <sub>x</sub>	0.24	1.05
		CO	0.11	0.48
		SO <sub>2</sub>	0.01	0.01
		VOC	0.02	0.09
		PM	0.05	0.22
8003B	GHU Flare	VOC	1.21	4.24
		NO <sub>x</sub>	1.80	4.93
		CO	3.60	9.83
		SO <sub>2</sub>	0.01	0.02
8801U	GHU Cooling Tower	VOC	0.88	3.86
8801F	GHU Fugitives (4)	VOC	0.29	1.27

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.

(2) Specific point source name. For fugitive sources use area name or fugitive source name.

(3) VOC - volatile organic compounds as defined in General Rule 101.1

NO<sub>x</sub> - total oxides of nitrogen

CO - carbon monoxide

TSP - total suspended particulate

SO<sub>2</sub> - sulfur dioxide

BZ - benzene

PM - particulate matter

H<sub>2</sub>SO<sub>4</sub> - sulfuric acid (98 percent)

(4) Fugitive emission rates are an estimate only and should not be considered as a maximum allowable emission rate.

(5) No more than two pyrolysis furnaces shall be decoked at any one time, one furnace to Decoke Drum EPN 1009 and one furnace to Decoke Drum EPN 1063.

- (6) Emission rates given are those attributable to normal service only, and do not include non-routine services such as emergency service.
- (7) Catalyst Regeneration, Purge Gas, and Pilots

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#### EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

- \* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day\_\_\_\_\_Days/week\_\_\_\_\_Weeks/year\_\_\_\_\_ or Hrs/year 8,760

Dated\_\_\_\_\_