Emission Sources - Maximum Allowable Emission Rates

Permit Numbers 50607, PSDTX331M1, PSDTX804, and PSDTX1017M1

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, sources, and related activities. 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	
			lbs/hour	TPY (4)
Normal Operations Emission Cap (10)	Combustion Units, Cooling Towers, Flares/Vapor Combustor, Fugitives (5), Loading, Process Vents, Storage Tanks, and Wastewater	Benzene	10.63	11.69
Normal Operations Emission Cap (10)	Combustion Units, Flares/Vapor Combustor, Fugitives, Process Vents, and Storage Tanks	H_2S	2.84	6.88
H-028	Crude Charge Heater 1 (100-H1)	NO_x	11.18	23.41
		CO	14.61	44.41
		VOC	1.10	4.80
		SO_2	15.53	14.52
		PM	1.51	6.63
		PM_{10}	1.51	6.63
		$PM_{2.5}$	1.51	6.63
H-036	Crude Charge Heater 2 (100-H2)	NO_x	11.18	31.56
		CO	14.61	55.54
		VOC	1.10	4.80
		SO_2	13.53	14.52
		PM	1.51	6.63
		PM_{10}	1.51	6.63
		$PM_{2.5}$	1.51	6.63

Emission Sources - Maximum Allowable Emission Rates

H-016	Vacuum Unit Charge Heater (14-H1401)	NO_x	4.95	21.66
		CO	8.43	18.45
		VOC	0.76	3.34
		SO_2	9.41	10.10
		PM	1.05	4.62
		PM_{10}	1.05	4.62
		$PM_{2.5}$	1.05	4.62
H-021	ROSE "DAO" Heater (160-H1)	NO_x	1.90	8.31
		CO	2.41	5.27
		VOC	0.22	0.96
		SO_2	2.70	2.89
		PM	0.30	1.32
		PM_{10}	0.30	1.32
		$PM_{2.5}$	0.30	1.32
H-022	Asphalt Heater (160-H2)	NO_x	0.98	4.22
		CO	1.62	3.51
		VOC	0.15	0.64
		SO_2	1.81	1.92
		PM	0.20	0.88
		PM_{10}	0.20	0.88
		$PM_{2.5}$	0.20	0.88

Emission Sources - Maximum Allowable Emission Rates

H-020	Isostripper Reboiler Heater (440-H1)	NO_x	1.99	4.90
		CO	3.08	3.79
		VOC	0.27	0.67
		SO_2	1.90	1.53
		PM	0.37	0.92
		PM_{10}	0.37	0.92
		$PM_{2.5}$	0.37	0.92
B-007	"BTX" Boiler (54-F1)	NO_x	12.33	34.16
		CO	18.02	27.76
		VOC	1.26	4.70
		SO_2	0.17	0.48
		PM	1.74	6.49
		PM_{10}	1.74	6.49
		$PM_{2.5}$	1.74	6.49
H-043	Reformate Splitter Heater No. 1. (54-H101)	NO_x	4.27	9.86
		CO	4.24	4.90
		VOC	0.38	0.89
		SO_2	4.73	2.68
		PM	0.53	1.22
		PM_{10}	0.53	1.22
		$PM_{2.5}$	0.53	1.22

Emission Sources - Maximum Allowable Emission Rates

H-044	Reformate Splitter Heater No. 2 (54-H102)	NO_x	1.78	5.75
		CO	3.03	4.90
		VOC	0.27	0.89
		SO_2	3.38	2.68
		PM	0.38	1.22
		PM_{10}	0.38	1.22
		$PM_{2.5}$	0.38	1.22
B-004	Boiler 6F1-A and Boiler 6F1-B (6F1-A & 6F1-B)	NO_x	25.97	72.43
		CO	9.18	12.80
		VOC	0.80	2.23
		SO_2	5.66	5.16
		PM	1.11	3.08
		PM_{10}	1.11	3.08
		$PM_{2.5}$	1.11	3.08
B-006	East Plant Boiler (6-F2)	NO_x	13.07	49.82
		CO	6.81	12.98
		VOC	0.59	2.24
		SO_2	0.08	0.23
		PM	0.81	3.09
		PM_{10}	0.81	3.09
		$PM_{2.5}$	0.81	3.09

Emission Sources - Maximum Allowable Emission Rates

H-041	DOT H_2 Recycle Furnace (F2201)	NO_x	3.40	5.70
		CO	2.90	2.43
		VOC	0.26	0.44
		SO_2	3.24	1.33
		PM	0.36	0.60
		PM_{10}	0.36	0.60
		$PM_{2.5}$	0.36	0.60
H-039	No. 1 SRU Hot Oil Heater (H101)	NO_x	0.69	1.60
		CO	0.43	0.50
		VOC	0.04	0.08
		SO_2	0.27	0.20
		PM	0.05	0.11
		PM_{10}	0.05	0.11
		$PM_{2.5}$	0.05	0.11

Emission Sources - Maximum Allowable Emission Rates

H-047	No. 2 SRU Hot Oil Heater (H401)	NO_x	1.84	6.58
		CO	2.06	3.69
		VOC	0.18	0.65
		SO_2	2.28	2.00
		PM	0.25	0.91
		PM_{10}	0.25	0.91
		$PM_{2.5}$	0.25	0.91
H-015A	Lubricating Oil Crude Atmospheric Heater (H1001)	NO_x	0.58	2.53
		CO	1.01	2.20
		VOC	0.09	0.38
		SO_2	0.02	0.04
		PM	0.12	0.53
		PM_{10}	0.12	0.53
		$PM_{2.5}$	0.12	0.53
H-015B	Lubricating Oil Crude Atmospheric Heater (H1002)	NO_x	0.32	1.41
		CO	0.55	1.23
		VOC	0.05	0.22
		SO_2	0.01	0.03
		PM	0.06	0.30
		PM_{10}	0.06	0.30
		$PM_{2.5}$	0.06	0.30
H-037	HDU Charge Heater 2 (H101)	NO_x	2.68	6.72
		CO	3.02	3.78
		VOC	0.26	0.66

Emission Sources - Maximum Allowable Emission Rates

H-038	HDU Reboiler Heater 2 (H102)	SO_2	1.86	1.52
		PM	0.36	0.91
		PM_{10}	0.36	0.91
		$PM_{2.5}$	0.36	0.91
		NO_x	1.85	4.65
		CO	2.86	3.60
		VOC	0.25	0.63
H-014	Crude Charge Heater 3 (H1102)	SO_2	1.76	1.45
		PM	0.34	0.87
		PM_{10}	0.34	0.87
		$PM_{2.5}$	0.34	0.87
		NO_x	4.16	13.11
		CO	5.51	8.69
		VOC	0.50	1.58
H-034	H.C.U. Recycle Heater (H1401)	SO_2	6.16	4.76
		PM	0.69	2.18
		PM_{10}	0.69	2.18
		$PM_{2.5}$	0.69	2.18
		NO_x	3.47	11.24
		CO	4.29	6.95
		VOC	0.37	1.21
		SO_2	2.64	2.80
		PM	0.52	1.67
		PM_{10}	0.52	1.67

Emission Sources - Maximum Allowable Emission Rates

H-035	H.C.U. Debutanizer Reboiler Heater (H1402)	$PM_{2.5}$	0.52	1.67
		NO_x	3.39	11.67
		CO	5.24	9.02
		VOC	0.46	1.57
H-018	H.C.U. Fractionation Heater (H1501A)	SO_2	3.23	3.63
		PM	0.63	2.17
		PM_{10}	0.63	2.17
		$PM_{2.5}$	0.63	2.17
		NO_x	2.40	10.51
		CO	3.71	16.22
		VOC	0.32	1.42
H-019	H.C.U. Fractionation Heater (H1501B)	SO_2	2.28	3.27
		PM	0.45	1.96
		PM_{10}	0.45	1.96
		$PM_{2.5}$	0.45	1.96
		NO_x	2.40	8.02
		CO	3.71	6.20
		VOC	0.32	1.09
		SO_2	2.28	2.50
		PM	0.45	1.50
		PM_{10}	0.45	1.50
		$PM_{2.5}$	0.45	1.50

Emission Sources - Maximum Allowable Emission Rates

H-045	DHT Charge Heater (H28001)	NO_x	1.91	8.37
		CO	2.28	4.99
		VOC	0.21	0.91
H-046	Fractionator Feed Heater (H28002)	SO_2	2.55	2.73
		PM	0.28	1.25
		PM_{10}	0.28	1.25
		$PM_{2.5}$	0.28	1.25
		NO_x	2.69	11.76
		CO	3.56	7.79
		VOC	0.32	1.41
H-023	Dowtherm Heater (160-H3)	SO_2	3.97	4.26
		PM	0.44	1.95
		PM_{10}	0.44	1.95
		$PM_{2.5}$	0.44	1.95
		NO_x	0.09	0.27
		CO	0.15	0.22
		VOC	0.01	0.04
		SO_2	0.17	0.13
		PM	0.02	0.06
		PM_{10}	0.02	0.06
		$PM_{2.5}$	0.02	0.06

Emission Sources - Maximum Allowable Emission Rates

H-004	Process Oil Treater (POT) (H401)	NO_x	0.41	1.79
		CO	0.72	3.12
		VOC	0.06	0.27
H-031	No. 1 HDU Stripper Reboiler Heater (H501)	SO_2	0.01	0.03
		PM	0.09	0.37
		PM_{10}	0.09	0.37
		$PM_{2.5}$	0.09	0.37
		NO_x	0.79	3.44
		CO	1.32	5.79
		VOC	0.12	0.51
H-010	No. 1 HDU Reactor Charge Heater (H502)	SO_2	1.46	1.57
		PM	0.16	0.71
		PM_{10}	0.16	0.71
		$PM_{2.5}$	0.16	0.71
		NO_x	1.05	4.59
		CO	1.76	7.71
		VOC	0.16	0.69
		SO_2	1.95	2.09
		PM	0.22	0.96
		PM_{10}	0.22	0.96
		$PM_{2.5}$	0.22	0.96

Emission Sources - Maximum Allowable Emission Rates

H-030	No. 2 Reformer Charge Heaters (H201, H203, H204)	NO_x	19.06	-
		CO	13.63	-
		VOC	2.38	-
H-032	No. 2 Reformer Charge Heater (H202)	SO_2	16.78	-
		PM	3.29	-
		PM_{10}	3.29	-
		$PM_{2.5}$	3.29	-
		NO_x	12.27	-
		CO	11.16	-
		VOC	0.97	-
H-033	No. 2 Reformer Stab. Reboiler (H205)	SO_2	6.87	-
		PM	1.35	-
		PM_{10}	1.35	-
		$PM_{2.5}$	1.35	-
		NO_x	2.25	-
		CO	3.48	-
		VOC	0.30	-
H-012	No.1 Reformer Charge Heaters (H504, H505A, H505B)	SO_2	2.14	-
		PM	0.42	-
		PM_{10}	0.42	-
		$PM_{2.5}$	0.42	-
		NO_x	5.41	-
		CO	6.34	-
		VOC	0.57	-

Emission Sources - Maximum Allowable Emission Rates

H-013	No. 1 Stabilizer Reboiler Heater (H506)	SO_2	7.00	-
		PM	0.78	-
		PM_{10}	0.78	-
		$PM_{2.5}$	0.78	-
		NO_x	1.86	-
		CO	1.05	-
		VOC	0.09	-
H-030, H-032, H-033, H-012, and	Subcaps for No.1 and No.2 Reformer Unit Heaters	SO_2	1.15	-
		PM	0.13	-
		PM_{10}	0.13	-
		$PM_{2.5}$	0.13	-
		NO_x	-	91.88
		CO	-	59.57
		VOC	-	10.46
S-007, S-008, S-033, S-036, S-039, S-044, FL-003, FL-004, FL-006 and FL-501	Subcaps for Storage Tanks Subcaps for Flares	SO_2	-	26.77
		PM	-	14.46
		PM_{10}	-	14.46
		$PM_{2.5}$	-	14.46
		VOC	14.08	18.67
		NO_x	15.59	18.83
		CO	80.33	96.98
F-28, F-100 (#1 Crude, Desalter),	VOC and NH_3 Subcaps for Equipment Fugitives (5)(10)	VOC	63.01	117.58
		SO_2	5.17	7.00
		VOC	130.66	572.31

Emission Sources - Maximum Allowable Emission Rates

F-0670	No.1 West Plant Cooling Tower (5)	NH_3	0.01	0.04
		VOC	0.25	1.10
		PM	0.36	1.58
		PM_{10}	0.14	0.60
F-2810	East Plant Cooling Tower (5)	$PM_{2.5}$	0.01	0.01
		VOC	1.68	7.36
		PM	2.40	10.52
		PM_{10}	0.36	1.58
		$PM_{2.5}$	0.01	0.01
F-3670	No. 2 West Plant Cooling Tower (5)	VOC	0.59	2.58
		PM	0.84	3.68
F-0680	F-0680 Open-Top Biotreatment	PM_{10}	0.32	1.41
		$PM_{2.5}$	0.01	0.01
		VOC	23.08	36.23
F-0671	No. 2 API Separator	VOC	0.48	0.95
F-0682	Crude Unit Sump	VOC	3.70	6.50
F-0683	No. 1 Reformer Sump	VOC	1.66	3.31
F-0684	600 Unit Sump	VOC	0.01	0.03
F-0685	R. R. Rack Sump	VOC	0.10	0.20
F-0686	Truck Loading Sump	VOC	0.09	0.18
F-0687	Land Farm	VOC	2.26	4.50
F-0688	Vacuum Unit Sump	VOC	2.08	4.14
F-0689	Crude Unload Sump	VOC	0.24	0.47

Emission Sources - Maximum Allowable Emission Rates

F-3110	No. 2 Reformer Sump	VOC	0.59	1.18

Emission Sources - Maximum Allowable Emission Rates

V-006	No. 1 Reformer Regeneration Vent	CO	37.50	1.50
V-007	No. 2 Reformer Regeneration Vent	Cl_2	0.40	0.02
		VOC	1.40	0.06
		CO	5.00	14.02
		Cl_2	0.01	0.04
V-010	FCCU Regeneration Vent	VOC	0.04	0.13
		NOx	62.69	28.82
		CO	195.47	184.29
		VOC	6.16	14.51
		SO_2	43.64	52.65
		PM	30.00	69.98
		PM_{10}	25.11	58.58
		$PM_{2.5}$	25.11	58.58
		H_2SO_4	13.69	59.96
		O_3	7.22	31.62

Emission Sources - Maximum Allowable Emission Rates

		HCN	19.49	45.47
V-008, V-009	Subcaps for Sulfur Plants	NO_x	6.83	19.32
		CO	29.09	82.32
		VOC	12.21	34.56
		SO_2	38.88	98.27
		PM	0.37	1.02
		PM_{10}	0.37	1.02
		$PM_{2.5}$	0.37	1.02
		TRS	2.63	9.51
L-001	Oil Truck Loading Rack	VOC	0.02	0.02
L-002	Gasoline Truck Loading Rack	VOC	9.09	3.46
L-004	Tank Car Loading Rack	VOC	0.01	0.01
VCU-1	Loading Rack Vapor Combustor	NO_x	3.01	0.71
		CO	8.75	2.07
		VOC	17.98	6.88
VCU-2	WWTP Vapor Combustor	VOC	1.41	2.09
		NOx	0.30	0.86
		CO	2.51	6.93
		SO_2	0.19	0.16
		PM	0.03	0.10
		PM_{10}	0.03	0.10
		$PM_{2.5}$	0.03	0.10
Planned Maintenance,				
Cooling Towers, Combustion Units		VOC (6) (7)	4,711.24	75.49

Emission Sources - Maximum Allowable Emission Rates

			NO_x (6) (7)	305.53	16.34
			CO (6) (7)	1,202.92	43.12
			SO_2 (6) (7)	894.13	61.01
			PM (6) (7)	4.54	0.66
			PM_{10} (6) (7)	4.54	0.66
			$PM_{2.5}$ (6) (7)	4.54	0.66
			H_2S (6) (7)	2.65	0.51
			Benzene (6) (7) (8)	90.70	2.65
			CS_2 (7)	0.33	0.02
			COS (7)	1.89	0.11
B-010	Standard Permit (SP) sources incorporated by reference. Sources remain authorized by the SP(s) as listed below. Registration Number 83511	STX Boiler	NO_x	5.10	22.34
			CO	12.31	53.93
			VOC	1.83	8.03
			NH_3	1.49	6.55
			SO_2	4.55	19.93
			PM	2.53	11.10
			PM_{10}	2.53	11.10
			$PM_{2.5}$	2.53	11.10

(1) Emission point identification - either specific equipment designation or emission point number (EPN) from a plot plan.
(2) Specific point source names. For fugitive sources, use an area name or fugitive source name.
(3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
CO - carbon monoxide
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$
PM_{10} - particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
Cl_2 - chlorine
COS - carbonyl sulfide
CS_2 - carbon disulfide
H_2S - hydrogen sulfide
H_2SO_4 - sulfuric acid
NH_3 - ammonia
TRS - total reduced sulfur
O_3 - ozone
HCN - hydrogen cyanide
(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
(5) Emission rate is an estimate and compliance is demonstrated by meeting the requirements of the applicable special conditions and permit application representations.
(6) Planned MSS VOC, NO_x, CO, SO_2, PM_{10}, H_2S, and Benzene allowable emissions are NOT included in the Maximum Operations Emission Caps.
(7) Beginning January 1, 2013, MSS emissions shall be based on a rolling 12-month period.
(8) Benzene MSS allowables are included in the VOC allowables.
(9) Ammonia fugitive allowable emissions are specified by EPN.
(10) These emission caps have been carried forward from the flexible permit and do not include MSS emissions. The caps have been lowered to equal the sum of the normal operation individual limits and subcaps. The caps include emissions from EPN B-010, incorporated by reference from Standard Permit 83511.

Dated: June 22, 2018