Emission Sources - Maximum Allowable Emission Rates

Permit Number 9708 and PSDTX861M3

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)
BENZENE CAPS: Tanks, Cooling Towers, Loading, and Fugitives (5)		Benzene	10.51	14.29
H_2S CAPS: Process Vents and Maintenance		H_2S	5.40	0.014
SULFURIC ACID CAPS (H_2SO_4): Process Vents		H_2SO_4	12.40	54.10
CHLORINE CAPS: Process Vents		Cl_2	0.40	0.50
HCl CAPS: Process Vents and Maintenance		HCl	7.10	4.29
NH_3 CAPS: Process Vents, Fugitives, and Maintenance		NH_3	800.40	164.80
MAINTENANCE EMISSIONS CAPS:		VOC	3926.35	30.13
		NO_x	101.41	2.42
		CO	654.79	7.33
		SO_2	1768.80	6.13
		H_2S	19.31	0.05
		HCl	4.00	< 0.01
		NH_3	700.00	0.95
		PM	1.98	0.40
B-10	No. 18 Boiler	NO_x	8.73	38.22
		CO	34.12	66.33
		VOC	1.21	5.28
		SO_2	2.32	10.16
		PM	1.67	7.30
		PM_{10}	1.67	7.30
		$PM_{2.5}$	1.67	7.30
B-11	No. 19 Boiler	NO_x	8.73	38.23

Emission Sources - Maximum Allowable Emission Rates

		CO	18.93	82.93
		VOC	1.21	5.28
		SO_2	2.32	10.16
		PM	1.67	7.30
		PM_{10}	1.67	7.30
		$PM_{2.5}$	1.67	7.30
B-12	600# Boiler	NO_x	49.28	172.69
		CO	20.85	73.05
		VOC	1.33	4.66
		SO_2	7.58	11.91
		PM	1.84	6.43
		PM_{10}	1.84	6.43
		$PM_{2.5}$	1.84	6.43
B-22A	Boiler B-22A	NO_x	1.38	4.03
		CO	6.52	14.28
		VOC	0.49	2.17
		SO_2	2.06	4.18
		PM	0.69	3.00
		PM_{10}	0.69	3.00
		$PM_{2.5}$	0.69	3.00
B-22B	Boiler B-22B	NO_x	2.00	5.83
		CO	9.43	20.64
		VOC	0.72	3.14
		SO_2	2.99	6.04
		PM	0.99	4.34
		PM_{10}	0.99	4.34
		$PM_{2.5}$	0.99	4.34
B-4	No. 11 Boiler	NO_x	17.01	59.59
		CO	7.57	18.32
		VOC	0.48	1.59
		SO_2	1.78	2.35
		PM	0.67	2.18
		PM_{10}	0.67	2.18
		$PM_{2.5}$	0.67	2.18
B-6	No. 13 Boiler	NO_x	17.24	60.42
		CO	6.95	17.59

Emission Sources - Maximum Allowable Emission Rates

		VOC	0.44	1.55
		SO_2	1.81	2.3
		PM	0.61	2.14
		PM_{10}	0.61	2.14
		$PM_{2.5}$	0.61	2.14
B-8	No. 15 Boiler	NO_x (7)	40.53	65.89
		NO_x (8)	9.40	32.94
		CO	25.20	46.45
		VOC	0.84	2.34
		SO_2	3.22	4.05
		PM	1.17	3.23
		PM_{10}	1.17	3.23
		$PM_{2.5}$	1.17	3.23
B-9	No. 16 Boiler	NO_x	13.16	32.94
		CO	13.26	46.45
		VOC	0.84	2.96
		SO_2	3.61	5.57
		PM	1.17	4.08
		PM_{10}	1.17	4.08
		$PM_{2.5}$	1.17	4.08
H-1	No. 1 Crude Charge Heater	NO_x	18.59	46.46
		CO	21.95	82.33
		VOC	1.67	6.26
		SO_2	6.96	12.04
		PM	2.31	8.66
		PM_{10}	2.31	8.66
		$PM_{2.5}$	2.31	8.66
H-11	No. 2 Crude Charge Heater (Anderson)	NO_x	3.87	14.23
		CO	6.53	24.01
		VOC	0.50	1.83
		SO_2	2.07	3.51
		PM	0.69	2.52
		PM_{10}	0.69	2.52
		$PM_{2.5}$	0.69	2.52
H-13	Gas Oil Frac. Heater	NO_x	4.00	17.52
		CO	2.83	12.41

Emission Sources - Maximum Allowable Emission Rates

		VOC	0.22	0.94
		SO_2	0.90	1.82
		PM	0.30	1.31
		PM_{10}	0.30	1.31
		$PM_{2.5}$	0.30	1.31
H-14	Unifiner Charge Heater	NO_x	2.60	11.38
		CO	1.88	8.23
		VOC	0.14	0.63
		SO_2	0.60	1.20
		PM	0.20	0.87
		PM_{10}	0.20	0.87
		$PM_{2.5}$	0.20	0.87
H-15	No. 1 Hydrotreater Charge Heater	NO_x	1.63	7.12
		CO	2.56	11.21
		VOC	0.19	0.85
		SO_2	0.81	1.64
		PM	0.27	1.18
		PM_{10}	0.27	1.18
		$PM_{2.5}$	0.27	1.18
H-18	C.C.R. Charge Heater	NO_x	17.96	52.81
		CO	26.28	33.37
		VOC	1.94	6.47
		SO_2	8.07	12.44
		PM	2.68	8.94
		PM_{10}	2.68	8.94
		$PM_{2.5}$	2.68	8.94
H-2	No. 1 Vacuum Charge Heater	NO_x (7)	3.71	15.47
		NO_x (8)	3.08	11.52
		CO	6.24	11.66
		VOC	0.47	1.77
		SO_2	1.98	3.41
		PM	0.66	2.45
		PM_{10}	0.66	2.45
		$PM_{2.5}$	0.66	2.45

Emission Sources - Maximum Allowable Emission Rates

H-26	No. 2 Vacuum Charge Heater	NO_x	4.06	15.76
		CO	6.54	25.38
		VOC	0.50	1.93
		SO_2	2.07	3.71
		PM	0.69	2.67
		PM_{10}	0.69	2.67
		$PM_{2.5}$	0.69	2.67
H-27	"P/P" Mole Sieve Regeneration Heater	NO_x	1.35	0.76
		CO	0.81	0.65
		VOC	0.05	0.04
		SO_2	0.22	0.22
		PM	0.07	0.06
		PM_{10}	0.07	0.06
		$PM_{2.5}$	0.07	0.06
H-28	Active Butane Oxygenate Heater	NO_x	1.16	5.08
		CO	1.00	3.25
		VOC	0.06	0.28
		SO_2	0.33	1.45
		PM	0.09	0.39
		PM_{10}	0.09	0.39
		$PM_{2.5}$	0.09	0.39
H-34	C.C.D.R. Stabilizer Reboiler Heater	NO_x	3.08	20.45
		CO	2.17	8.68
		VOC	0.14	0.59
		SO_2	0.68	1.21
		PM	0.19	0.81
		PM_{10}	0.19	0.81
		$PM_{2.5}$	0.19	0.81
H-36	No. 2 Naphtha Hydrotreater Charge Heater	NO_x	1.78	7.80
		CO	4.07	8.92
		VOC	0.31	1.36
		SO_2	1.29	2.61
		PM	0.43	1.88
		PM_{10}	0.43	1.88
		$PM_{2.5}$	0.43	1.88
H-37	No. 2 Naphtha Hydrotreater Des2	NO_x	6.40	15.97

Emission Sources - Maximum Allowable Emission Rates

	Reboiler	CO	4.53	11.32
		VOC	0.34	0.86
		SO_2	1.44	1.66
		PM	0.48	1.19
		PM_{10}	0.48	1.19
		$PM_{2.5}$	0.48	1.19
H-38	#2 Reformer Charge Heater	NO_x	13.58	42.07
		CO	24.66	66.50
		VOC	1.88	5.82
		SO_2	7.82	11.18
		PM	2.59	8.04
		PM_{10}	2.59	8.04
		$PM_{2.5}$	2.59	8.04
H-39	#2 Reformer Stabilizer Reboiler Heater	NO_x	3.47	12.78
		CO	2.05	7.55
		VOC	0.16	0.57
		SO_2	0.65	1.10
		PM	0.22	0.79
		PM_{10}	0.22	0.79
		$PM_{2.5}$	0.22	0.79
H-40	P.D.A. Asph. Htr.	NO_x	10.21	37.17
		CO	5.65	10.29
		VOC	0.43	1.56
		SO_2	1.79	3.01
		PM	0.59	2.16
		PM_{10}	0.59	2.16
		$PM_{2.5}$	0.59	2.16
H-41	No. 2 Crude Charge Heater	NO_x	16.40	71.83
		CO	21.92	36.49
		VOC	1.67	7.31
		SO_2	6.95	14.05
		PM	2.31	10.10
		PM_{10}	2.31	10.10
		$PM_{2.5}$	2.31	10.10

Emission Sources - Maximum Allowable Emission Rates

H-42	Hydrocracker Recycle Heater	NO_x	4.06	15.28
		CO	7.01	13.20
		VOC	0.53	2.01
		SO_2	2.22	3.86
		PM	0.74	2.78
		PM_{10}	0.74	2.78
		$PM_{2.5}$	0.74	2.78
H-43	Hydrocracker "DEC4" Reboiler Heater	NO_x	3.31	14.49
		CO	6.17	13.51
		VOC	0.47	2.06
		SO_2	1.96	3.95
		PM	0.65	2.84
		PM_{10}	0.65	2.84
		$PM_{2.5}$	0.65	2.84
H-45	#1 Hydrotreater Charge Heater	NO_x	2.66	11.67
		CO	4.97	10.88
		VOC	0.38	1.66
		SO_2	1.57	3.18
		PM	0.52	2.29
		PM_{10}	0.52	2.29
		$PM_{2.5}$	0.52	2.29
H-46	C.C.R. Interheater	NO_x	9.53	32.77
		CO	17.53	60.27
		VOC	1.12	3.84
		SO_2	4.66	8.79
		PM	1.54	5.31
		PM_{10}	1.54	5.31
		$PM_{2.5}$	1.54	5.31
H-48	Diesel Hydrotreater Charge Heater	NO_x	3.42	14.98
		CO	6.73	14.74
		VOC	0.51	2.24
		SO_2	2.13	4.31
		PM	0.71	3.10
		PM_{10}	0.71	3.10
		$PM_{2.5}$	0.71	3.10
H-6	Dago Heater	NO_x	3.39	14.87

Emission Sources - Maximum Allowable Emission Rates

		CO	2.01	8.78
		VOC	0.15	0.67
		SO_2	0.64	1.28
		PM	0.21	0.92
		PM_{10}	0.21	0.92
		$PM_{2.5}$	0.21	0.92
H-64	No. 4 Hydrotreater Charge Heater	NO_x	1.26	5.54
		CO	2.36	5.16
		VOC	0.18	0.79
		SO_2	0.75	1.51
		PM	0.25	1.09
		PM_{10}	0.25	1.09
		$PM_{2.5}$	0.25	1.09
H-8	HCU Fract Charge Heater (Petrochem North)	NO_x	4.69	20.52
		CO	6.26	27.43
		VOC	0.48	2.09
		SO_2	1.99	4.01
		PM	0.66	2.88
		PM_{10}	0.66	2.88
		$PM_{2.5}$	0.66	2.88
H-80	FCC Gas HDS Charge Heater	NO_x	3.05	13.36
		CO	6.97	30.54
		VOC	0.53	2.32
		SO_2	2.21	4.47
		PM	0.73	3.21
		PM_{10}	0.73	3.21
		$PM_{2.5}$	0.73	3.21
H-88	Acid Plant Feed Heater	NO_x	0.79	3.46
		CO	0.48	0.43
		VOC	0.03	0.03
		SO_2	0.16	0.50
		PM	0.04	0.04
		PM_{10}	0.04	0.04
		$PM_{2.5}$	0.04	0.04

Emission Sources - Maximum Allowable Emission Rates

H-9	No. 2 Crude Heater (Petrochem South)	NO_x (7)	13.08	57.31
		NO_x (8)	3.02	13.25
		CO (7)	6.26	13.72
		CO (8)	3.40	7.45
		VOC (7)	0.48	2.09
		VOC (8)	0.26	1.13
		SO_2 (7)	1.99	4.01
		SO_2 (8)	1.08	2.18
		PM (7)	0.66	2.88
		PM (8)	0.36	1.57
		PM_{10} (7)	0.66	2.88
		PM_{10} (8)	0.36	1.57
		$PM_{2.5}$ (7)	0.66	2.88
		$PM_{2.5}$ (8)	0.36	1.57
F-20	No. 1 Refinery Cooling Tower	VOC (5)	3.52	15.40
		PM	3.06	13.41
		PM_{10}	0.51	2.24
		$PM_{2.5}$	<0.01	0.02
F-21	Gasoline Plant Cooling Tower	VOC (5)	2.90	12.69
		PM	2.54	11.13
		PM_{10}	0.42	1.83
		$PM_{2.5}$	0.0033	0.015
F-47	No. 2 Refinery Cooling Tower	VOC (5)	2.28	9.97
		PM	2.16	9.48
		PM_{10}	0.30	1.29
		$PM_{2.5}$	0.003	0.012
E-7	Unifiner Engine (Clark)	NO_x	4.56	19.98
		CO	0.08	0.36
		VOC	0.17	0.76
		SO_2	0.01	0.01
		PM	0.07	0.29
		PM_{10}	0.07	0.29
		$PM_{2.5}$	0.07	0.29
FL-9	Brine Degas Drum	NO_x	8.21	0.99
		CO	16.38	1.98
		VOC	30.15	5.52

Emission Sources - Maximum Allowable Emission Rates

		SO_2	0.01	0.01
FL-6	Wastewater Flare	NO_x	2.09	4.59
		CO	10.66	23.38
		VOC	5.00	10.94
		SO_2	2.03	1.33
		H_2S	0.02	0.01
		NH_3	< 0.01	<0.01
Combined Compliance Short Term and Annual Caps for Flares FL-1, FL-3, FL-4, and FL-8 (11)		NO_x	40.46	34.31
		CO	210.06	190.66
		VOC	352.09	179.46
		SO_2	19.05	15.69
		H_2S	6.07	0.27
FGR-SUMP	FGR Oily Water Sump	VOC	0.03	0.07
FL-7	Loading Rack Vapor Combustor	NO_x	6.12	13.24
		CO	17.79	36.42
		VOC	18.01	16.53
		SO_2	0.13	0.09
L-13	Railcar Loading Rack	VOC	0.25	0.15
L-14	North Railcar Rack	VOC	18.35	0.81
L-2	Asphalt Truck Loading Rack	VOC	4.49	2.28
L-5/L-11	Railcar/ Truck Loading Rack	VOC	13.15	17.23
L-7	Asphalt Railcar Rack	VOC	0.42	1.37
V-29	Sulfuric Acid Plant Vent	SO_2	21.67	70.17
V-20	F.C.C.U. (Fluidized Catalytic Cracking Unit)	NO_x	220.11	163.36
		CO	37.80	93.07
		VOC	10.55	38.19
		SO_2	459.69	138.69
		PM	80.00	294.02
		PM_{10}	80.00	294.02
		$PM_{2.5}$	80.00	294.02
		NH_3 (6)	40.74	146.00
		H_2SO_4	12.40	41.98
		Hydrogen Cyanide	25.20	108.54
V-18	No. 1 Reformer Cat Regenerator Vent	CO	3.27	14.31

Emission Sources - Maximum Allowable Emission Rates

		VOC	0.62	2.72
V-21	No. 2 Reformer Cat Regenerator Vent	CO	70.00	3.36
		VOC	0.032	<0.01
V-13	Soda Ash Silo	PM	0.09	0.02
		PM_{10}	0.09	0.02
		$PM_{2.5}$	0.09	0.02
V-14	Lime Silo Vent	PM	0.09	0.02
		PM_{10}	0.09	0.02
		$PM_{2.5}$	0.09	0.02
V-17	FCC Catalyst Silo Vent	PM	0.01	0.01
		PM_{10}	0.01	0.01
		$PM_{2.5}$	0.01	0.01
V-5	SRU No. 1 Incinerator	NO_x	0.40	1.75
		CO	1.87	8.20
		VOC	0.19	0.82
		SO_2	10.69	46.84
		H_2S	0.11	0.50
		PM	0.38	1.67
		PM_{10}	0.38	1.67
		$PM_{2.5}$	0.38	1.67
V-16	SRU No. 2 Incinerator	NO_x	0.56	2.45
		CO	13.66	59.82
		VOC	0.2	0.87
		SO_2	10.96	48.01
		H_2S	0.12	0.51
		PM	0.84	3.68
		PM_{10}	0.84	3.68
		$PM_{2.5}$	0.84	3.68
V-30	FCCU Spent Catalyst Roll Off Boxes	PM_{10}	<0.01	<0.01
		$PM_{2.5}$	<0.01	<0.01
S-044	Tank 144	Caustic	0.01	0.01
S-142	Tank 232	Caustic	0.01	0.01
CARBON CAN	Carbon Canister System Fugitives (CAS1 - CAS7 & FGR Sump)	VOC	5.04	11.04

Emission Sources - Maximum Allowable Emission Rates

F-2REF_HT, F-4HT, F-85, F-HCU, F-ALKY_PDA, F-ASPHALT, F-BRINE, F-C4ISOM, F-CASING, F-CAVERN, F-FGR, F-DESALT, F-DHDSU, F-ETNKFRM, F-FCCU, F-GASBLD, F-GASPLT, F-GHDS, F-HDS_GOF, F-LPG, F-IOCTENE, F-NBULKLD, F-NTNKFRM, F-ORU, F-PENEX, F-PSA, F-PUMPSTA, F-RAILLOAD, F-RLE, F-SBULKLD, F-SRU1, F-SRU2, F-SWS, F-UNIFINER, F-WTNKFRM, F-MSAT, F-WWTP, F-AMINE2 F-MSATLOAD, F-ALKY, F-SUMP, REMEDFUG, TKOW3FUG, TKOW15FUG, 2021FUG, 2022FUG		H_2S	1.94	8.54
S-025, S-026, S-035, S-042 S-049, S-053, S-056, S-057, S-058, S-059, S-063, S-064, S-071, S-073, S-086, S-140, S-141, S-168, S-173, S-174, S-175, S-179, S-180S-184 S-195, S-196, S-197	Sub cap for Storage Tanks	VOC	27.78	4.51
S-042, , S-053, S-059, S-071, S-141, S-184, S-195, S-196, S-197, S-199, S-203, S-208, , S-227, S-228, S-233, S-234	Subcap for Crude Expansion Tanks	VOC	8.93	16.54
OX-001	Wastewater Sludge Centrifuge	NO_x	0.01	0.01
		CO	0.14	0.63
		VOC	0.01	0.01
		SO_2	0.15	0.67
OW3	Remediation Mix Oil Tank	VOC	0.01	0.03
OW15	Remediation Mix Oil Tank	VOC	0.01	0.03
TK-2020	Remediation Mix Oil Tank	VOC	0.47	0.26

Emission Sources - Maximum Allowable Emission Rates

TK-2021	Remediation Mix Oil Tank	VOC	0.02	0.05
TK-2022	Remediation Mix Oil Tank	VOC	0.02	0.05
OW3VACTR	Remediation Vac Truck	VOC	0.63	0.03
OW15VACTR	Remediation Vac Truck	VOC	0.63	0.03
2021VACTR	Remediation Vac Truck	VOC	0.63	0.03
2022VACTR	Remediation Vac Truck	VOC	0.63	0.03
1220TKMXX1	Rail Facility ULSD Flush Tankage	VOC	0.02	0.01
ADDITIVETK	Biodiesel Additive Tank	VOC	0.31	0.03
MSS_ABRBLS	Abrasive Blasting Operation	PM	0.54	0.36
		PM_{10}	0.07	0.05
		$PM_{2.5}$	< 0.01	< 0.01

(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 Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} - total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide
H_2S - hydrogen sulfide
H_2SO_4 - sulfuric acid
HCl - hydrogen chloride
NH_3 - ammonia
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 is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) FCCU contribution to the ammonia cap.
(7) These emission limits are effective until such time low-NO_x burners are installed in accordance with Special Condition 39 of Permit 9708 issued December 20, 2013.
(8) These emission limits are effective after low-NO_x burners are installed in accordance with Special Condition 39 of Permit 9708 issued December 20, 2013.

Date: May 3, 2017