

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 ₂ S CAPS: Process Vents and Maintenance		H ₂ S	5.40	0.014
SULFURIC ACID CAPS (H ₂ SO ₄): Process Vents		H ₂ SO 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 ₂ S	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

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		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

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		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

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		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

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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

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	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

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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

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		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

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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

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		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 ₂ S	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 ₂ S	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 ₂ SO ₄	12.40	41.98
		Hydrogen Cyanide	25.20	108.54
V-18	No. 1 Reformer Cat Regenerator Vent	CO	3.27	14.31

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		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 ₂ S	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 ₂ S	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

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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 ₂ S	1.95	8.56
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

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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
 - SO₂ - sulfur dioxide
 - PM - total particulate matter, suspended in the atmosphere, including PM₁₀ and PM_{2.5}, as represented
 - PM₁₀ - 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
 - H₂S - hydrogen sulfide
 - H₂SO₄ - sulfuric acid
 - HCl - hydrogen chloride
 - NH₃ - 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: August 3, 2017