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)
MAINTENANCE EMISSIONS CAPS: (7)		VOC	4517.54	33.06
		NO_X	116.53	14.83
		CO	677.03	18.89
		SO_2	1768.80	6.13
		H_2S	19.31	0.05
		HCl	4.00	< 0.01
		PM	2.02	0.44
		PM_{10}	2.02	0.44
		$PM_{2.5}$	2.02	0.44
B-10	No. 18 Boiler	NO_X	8.73	38.22
		CO	28.08	57.67
		VOC	1.21	5.28
		SO_2	5.18	10.15
		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	38.22
		CO	15.86	69.47
		VOC	1.21	5.28
		SO_2	5.18	10.15
		PM	1.67	7.30
		PM_{10}	1.67	7.30
		$PM_{2.5}$	1.67	7.30

Emission Sources - Maximum Allowable Emission Rates

B-12	600# Boiler	NO_X	49.28	155.43
		CO	17.47	61.21
		VOC	1.33	4.66
		SO_2	5.70	8.94
		PM	1.84	6.43
		PM_{10}	1.84	6.43
		$PM_{2.5}$	1.84	6.43
B-4	No. 11 Boiler	NO_X	17.01	59.59
		CO	6.35	18.32
		VOC	0.48	1.69
		SO_2	2.07	3.25
		PM	0.67	2.34
		PM_{10}	0.67	2.34
		$PM_{2.5}$	0.67	2.34
B-6	No. 13 Boiler	NO_X	15.60	54.66
		CO	5.82	17.59
		VOC	0.44	1.55
		SO_2	1.90	2.98
		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	9.40	32.94
		CO	11.10	38.92
		VOC	0.84	2.96
		SO_2	3.62	5.69
		PM	1.17	4.09
		PM_{10}	1.17	4.09
		$PM_{2.5}$	1.17	4.09
B-9	No. 16 Boiler	NO_X	13.16	32.94
		CO	11.11	38.92
		VOC	0.84	2.96
		SO_2	3.62	5.69
		PM	1.17	4.09
		PM_{10}	1.17	4.09
		$PM_{2.5}$	1.17	4.09
H-1	No. 1 Crude Charge Heater	NO_X	18.59	46.46

Emission Sources - Maximum Allowable Emission Rates

		CO	21.96	82.34
		VOC	1.67	6.26
		SO_2	7.16	12.03
		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	6.54	24.01
		VOC	0.50	1.83
		SO_2	2.13	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	2.84	12.42
		VOC	0.22	0.94
		SO_2	0.93	1.81
		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	0.61	1.20
		PM	0.20	0.87
		PM_{10}	0.20	0.87
		$PM_{2.5}$	0.20	0.87
H-15	No. 1 Naphtha Hydrotreater Desulfurizer Boiler	NO_X	1.63	7.12
		CO	2.56	11.22
		VOC	0.19	0.85
		SO_2	0.84	1.64
		PM	0.27	1.18
		PM_{10}	0.27	1.18
		$PM_{2.5}$	0.27	1.18
H-18	No. 1 Reformer Charge Heater	NO_X	17.96	52.81
		CO	25.45	33.37

Emission Sources - Maximum Allowable Emission Rates

		VOC	1.94	6.47
		SO_2	8.31	12.43
		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	3.08	11.52
		CO	6.24	11.66
		VOC	0.47	1.77
		SO_2	2.04	3.41
		PM	0.66	2.45
		PM_{10}	0.66	2.45
		$PM_{2.5}$	0.66	2.45
H-26	No. 2 Vacuum Charge Heater	NO_X	4.06	15.76
		CO	6.55	25.39
		VOC	0.50	1.93
		SO_2	2.14	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	0.68	0.38
		VOC	0.05	0.03
		SO_2	0.22	0.06
		PM	0.07	0.04
		PM_{10}	0.07	0.04
		$PM_{2.5}$	0.07	0.04
H-28	Active Butane Oxygenate Heater	NO_X	1.16	5.07
		CO	0.84	3.67
		VOC	0.06	0.28
		SO_2	0.27	0.54
		PM	0.09	0.39
		PM_{10}	0.09	0.39
		$PM_{2.5}$	0.09	0.39

Emission Sources - Maximum Allowable Emission Rates

H-34	No. 1 Reformer Stabilizer Reboiler	NO_X	3.08	13.48
		CO	1.82	7.96
		VOC	0.14	0.61
		SO_2	0.59	1.16
		PM	0.19	0.84
		PM_{10}	0.19	0.84
		$PM_{2.5}$	0.19	0.84
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	1.33	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 Desulfurizier Reboiler	NO_X	6.40	15.97
		CO	4.54	11.32
		VOC	0.34	0.86
		SO_2	1.48	1.65
		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	24.67	66.53
		VOC	1.88	5.82
		SO_2	8.05	11.17
		PM	2.59	8.04
		PM_{10}	2.59	8.04
		$PM_{2.5}$	2.59	8.04

Emission Sources - Maximum Allowable Emission Rates

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	0.67	1.10
		PM	0.22	0.79
		PM_{10}	0.22	0.79
		$PM_{2.5}$	0.22	0.79
H-40	No. 1 PDA Asphalt Heater (Asphalt-South)	NO_X	10.21	37.17
		CO	5.66	10.29
		VOC	0.43	1.57
		SO_2	1.85	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-Born Heater	NO_X	16.40	71.83
		CO	21.93	36.49
		VOC	1.67	7.31
		SO_2	7.16	14.03
		PM	2.31	10.10
		PM_{10}	2.31	10.10
		$PM_{2.5}$	2.31	10.10
H-42	Hydrocracker Recycle Heater	NO_X	4.06	15.28
		CO	7.02	13.21
		VOC	0.53	2.01
		SO_2	2.29	3.86
		PM	0.74	2.78
		PM_{10}	0.74	2.78
		$PM_{2.5}$	0.74	2.78

Emission Sources - Maximum Allowable Emission Rates

H-43	HCU Debutanizer Reboiler Heater	NO_X	3.31	14.49
		CO	6.17	13.52
		VOC	0.47	2.06
		SO_2	2.01	3.95
		PM	0.65	2.84
		PM_{10}	0.65	2.84
		$PM_{2.5}$	0.65	2.84
H-45	No. 1 Naphtha Hydrotreater Charge Heater	NO_X	2.66	11.67
		CO	4.97	10.88
		VOC	0.38	1.66
		SO_2	1.62	3.18
		PM	0.52	2.29
		PM_{10}	0.52	2.29
		$PM_{2.5}$	0.52	2.29
H-46	No. 1 Reformer No. 1 Interheater	NO_X	9.53	32.77
		CO	14.68	50.50
		VOC	1.12	3.84
		SO_2	4.79	7.38
		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	2.20	4.31
		PM	0.71	3.10
		PM_{10}	0.71	3.10
		$PM_{2.5}$	0.71	3.10

Emission Sources - Maximum Allowable Emission Rates

H-6	Dago Heater	NO_X	3.39	14.87
		CO	2.01	8.78
		VOC	0.15	0.67
		SO_2	0.65	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	1.27	5.54
		CO	2.36	5.17
		VOC	0.18	0.79
		SO_2	0.77	1.51
		PM	0.25	1.09
		PM_{10}	0.25	1.09
		$PM_{2.5}$	0.25	1.09
H-8	HCU Charge Heater (Petrochem North)	NO_X	4.69	20.52
		CO	6.27	27.45
		VOC	0.48	2.09
		SO_2	2.04	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	6.98	30.55
		VOC	0.53	2.32
		SO_2	2.28	4.46
		PM	0.73	3.21
		PM_{10}	0.73	3.21
		$PM_{2.5}$	0.73	3.21
H-88	Acid Plant Startup Heater (Intermittent)	NO_X	0.79	3.46
		CO	0.40	1.75
		VOC	0.03	0.13
		SO_2	0.13	0.26
		PM	0.04	0.18
		PM_{10}	0.04	0.18
		$PM_{2.5}$	0.04	0.18
H-89	H2 Unit Reformer	NO_x	5.33	15.58

Emission Sources - Maximum Allowable Emission Rates

		CO	27.17	59.50
		VOC	1.92	8.40
		SO_2	5.41	11.86
		PM	2.65	11.61
		PM_{10}	2.65	11.61
		$PM_{2.5}$	2.13	9.35
		HAPs	0.66	2.88
		NH_3	1.65	7.24
H-9	No. 2 Crude Heater (Petrochem South)	NO_X	3.02	13.25
		CO	3.40	7.45
		VOC	0.26	1.13
		SO_2	1.11	2.18
		PM	0.36	1.57
		PM_{10}	0.36	1.57
		$PM_{2.5}$	0.36	1.57
F-20	No. 1 Refinery Cooling Tower	VOC (5) (6)	3.52	15.40
		Benzene	0.21	0.92
		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) (6)	2.90	12.69
		Benzene	0.17	0.76
		PM	2.54	11.13
		PM_{10}	0.42	1.83
		$PM_{2.5}$	< 0.01	0.02
F-47	No. 2 Refinery Cooling Tower	VOC (5) (6)	2.28	9.97
		Benzene	0.14	0.59
		PM	2.16	9.48
		PM_{10}	0.30	1.29
		$PM_{2.5}$	< 0.01	0.01

Emission Sources - Maximum Allowable Emission Rates

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
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 (8)		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	6.39	8.83
		CO	15.73	21.89
		VOC (6)	19.23	9.71
		Benzene	6.87	1.38
		SO_2	0.09	0.02
		PM	0.26	0.17
		PM_{10}	0.26	0.17
		$PM_{2.5}$	0.26	0.17
L-2	Asphalt Truck Loading Rack	VOC	7.49	14.13
L-11	Railcar/ Truck Loading Rack	VOC (6)	10.48	10.20
		Benzene	0.32	0.32
L-7	Asphalt Railcar Rack	VOC	6.97	12.82

Emission Sources - Maximum Allowable Emission Rates

V-29	Sulfuric Acid Plant Vent	SO_2	21.67	7.36
		H_2SO_4	0.63	2.74
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	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
		VOC	0.61	2.68
		HCl	0.15	0.67
		Cl_2	0.04	0.19
V-21	No. 2 Reformer Cat Regenerator Vent	CO	70.00	3.36
		VOC	0.03	< 0.01
		HCl	1.06	0.05
		Cl_2	0.31	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

Emission Sources - Maximum Allowable Emission Rates

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	0.20	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	< 0.01	< 0.01
		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 – CAS9)	VOC	3.24	5.68
F-1CRUDE, F-1REF_HT, F-2CRUDE, F-2REF_HT, F-4HT, F-HCU, F-ALKY_PDA, F-ALKY, F-ASPHALT, 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-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-SUMP	Cap for Fugitives	VOC (5) (6)	151.27	662.17
		Benzene (5)	0.99	4.31
		H_2S (5)	0.24	1.02
		NH_3 (5)	0.03	0.14

Emission Sources - Maximum Allowable Emission Rates

S-168, S-173, S-174, S-175, S-184, S-195, S-196, S-197, S-199, S-227, S-228,	Cap for Storage Tanks	VOC (6)	3.08	6.57
		Benzene	0.01	0.02
OX-001	Wastewater Sludge Centrifuge Catalytic Oxidizer	NO_X	< 0.01	< 0.01
		CO	0.34	1.48
		VOC	0.03	0.11
		SO_2	1.25	5.49
		PM	< 0.01	< 0.01
		PM_{10}	< 0.01	< 0.01
		$PM_{2.5}$	< 0.01	< 0.01
ADDITIVETK	Biodiesel Additive Tank	VOC	5.03	1.68
F-85	Painting	VOC	4.25	1.26
F-BRINE	Brine Pond Fugitives	VOC (5)	23.74	2.80
MSS_ABRBLS	Abrasive Blasting Operation	PM	0.54	0.37
		PM_{10}	0.07	0.05
		$PM_{2.5}$	< 0.01	< 0.01
F-HYDROGEN	H2 Unit Fugitives (5)	VOC	0.37	1.47
		CO	2.34	10.26
		SO_2	0.01	0.01
		NH_3	0.01	0.05
FL-4	H2 Unit MSS Emissions from Flares (9)	NO_x	20.58	3.59
		CO	104.86	17.73
		VOC	0.16	0.01
		SO_2	1.70	0.03
		NH_3	18.25	0.44
H2-MSS	H2 Unit MSS (10)	CO	15.34	10.99
		VOC	0.72	0.03
		H_2S	0.01	0.01
		PM	0.09	0.01
		PM_{10}	0.09	0.01

Emission Sources - Maximum Allowable Emission Rates

		$PM_{2.5}$	0.01	0.01
		NH_3	0.08	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
HAPs - hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C
NH_3 - ammonia
Cl_2 - chlorine
(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) VOC rate includes Benzene emissions.
(7) See Attachment D for a list of sources included in the Maintenance Emissions Cap.
(8) The caps for flares include emissions associated with the flare gas recovery maintenance.
(9) Includes only maintenance, startup, and shutdown (MSS) emissions from the activities authorized in the special conditions controlled by the No. 3 Hydrocracking Unit (HCU) Flare authorized in Permit Number 9708.
(10) Includes only MSS emissions from the activities authorized in the special conditions.

Date: June 10, 2022

Emission Sources - Maximum Allowable Emission Rates

Permit Number GHGPSDTX20

This table lists the maximum allowable emission rates of greenhouse gas (GHG) emissions, as defined in Title 30 Texas Administrative Code § 101.1, for all sources of GHG air contaminants on the applicant's property that are authorized 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 authorized by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates
			TPY (6)
H-2	No. 1 Vacuum Charge Heater	CO_2 (7)	37,571.78
		CH_4 (7)	2.18
		N_2O (7)	0.44
		CO_2e (5)	37,754
H-64	No. 4 Hydrotreater Charge Heater	CO_2 (7)	16,631.04
		CH_4 (7)	0.96
		N_2O (7)	0.19
		CO_2e (4)	16,711
F-1CRUDE, F-2CRUDE, F-RLE, F-4NHT, F-HCU, F-DHDSU, F-GHDS, F-SRU1, F-SRU2, F-WWTP, F-ETNKFRM, F-NTNKFRM, F-WTNKFRM	Fugitives	CO_2 (7)	No Numerical Limit (8)
		CH_4 (7)	3.55
		N_2O (7)	No Numerical Limit (8)
		CO_2e (5)	74.6
MSS FUG	Process Fugitives MSS (11)	CO_2 (7)	No Numerical Limit (8)
		CH_4 (7)	0.03
		N_2O (7)	No Numerical Limit (8)
		CO_2e (5)	0.63
Totals (9), (10)		CO_2 (7)	54,202.82
		CH_4 (7)	6.72
		N_2O (7)	0.63
		CO_2e	54,540.23

Emission Sources - Maximum Allowable Emission Rates

(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) CO_2 - carbon dioxide
N_2O - nitrous oxide
CH_4 - methane
CO_2e - carbon dioxide equivalents
(4) CO_2e based on the following Global Warming Potentials (1/2015): CO_2 (1), N_2O (298) and CH_4 (25).
(5) CO_2e based on the following Global Warming Potentials (10/2009): CO_2 (1), N_2O (298) and CH_4 (21).
(6) Compliance with annual emission limits (tons per year) is based on a 12-month rolling period. These rates include emissions from maintenance, startup, and shutdown.
(7) Emission rate is given for informational purposes only and does not constitute enforceable limit.
(8) All values indicated as "No Numerical Limit Established" are less than 0.01 tpy with appropriate rounding. The emission limit will be a design/work practice standard specified in the permit.
(9) The total emission for CH_4, N_2O, CO_2, and CO_{2e} do not include the PTE for process fugitive emission only increase fugitive components.
(10) Totals represent the amount of new or modified demission unit greenhouse gas emissions.
(11) Process fugitives' emissions are estimated for additional fugitive components only to be added by this project.

Date: September 20, 2022