Emission Sources - Maximum Allowable Emission Rates

Permit Number 117323

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)
COMP-15	Plant IV Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-16	Plant IV Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-17	Plant IV Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-18	Plant IV Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14

Emission Sources - Maximum Allowable Emission Rates

		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-19	Plant IV Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-25	Plant VI Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-26	Plant VI Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05

Emission Sources - Maximum Allowable Emission Rates

		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-27	Plant VI Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-28	Plant VI Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
COMP-29	Plant VI Residue Compressor Engine – Caterpillar G3612	VOC	3.91	17.14
		NO_x	3.91	17.14
		CO	3.13	13.71
		PM	0.24	1.05
		PM_{10}	0.24	1.05
		$PM_{2.5}$	0.24	1.05
		SO_2	0.35	0.06
		Benzene	0.01	0.05
		HAP	0.61	2.67
BD1	Inlet Equipment Blowdowns	VOC	38.81	0.73

Emission Sources - Maximum Allowable Emission Rates

BD2	Cryo Equipment Blowdowns	VOC	191.39	1.77
BD3	Ram IV Residue Compressor Blowdowns	VOC	0.32 (6)	< 0.01 (7)
BD4	Ram V Residue Compressor Blowdowns	VOC	0.32 (6)	< 0.01 (7)
BD5	Ram VI Residue Compressor Blowdowns	VOC	0.34 (6)	< 0.01 (7)
BD6	Recycle Compressors Blowdowns	VOC	0.83 (6)	0.04 (7)
		H_2S	< 0.01 (6)	< 0.01 (7)
		Benzene	< 0.01 (6)	< 0.01 (7)
		HAP	0.02 (6)	< 0.01 (7)
BD7	Y-Grade Compressor Blowdowns	VOC	1.95 (6)	0.10 (7)
		H_2S	<0.01 (6)	<0.01 (7)
		Benzene	<0.01 (6)	<0.01 (7)
		HAP	0.02 (6)	<0.01 (7)
H-8	36 MMBtu/hr - Ramsey IV Trim Heater	VOC	0.19	0.85
		NO_x	1.62	7.10
		CO	1.33	5.83
		PM	0.27	1.17
		PM_{10}	0.27	1.17
		$PM_{2.5}$	0.27	1.17
		SO_2	0.53	0.09
		H_2S	0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.07	0.29
H-9	90 MMBtu/hr - Amine Hot Oil Heater	VOC	0.49	2.14
		NO_x	3.26	14.27
		CO	3.34	14.65
		PM	0.67	2.95
		PM_{10}	0.67	2.95
		$PM_{2.5}$	0.67	2.95
		SO_2	1.33	0.23
		H_2S	0.02	<0.01
		Benzene	<0.01	<0.01
		HAP	0.17	0.73

Emission Sources - Maximum Allowable Emission Rates

H-10	23.4 MMBtu/hr – Ram VI Molecular Sieve Regenerator Heater	VOC	0.13	0.55
		NO_x	1.05	4.61
		CO	0.86	3.79
		PM	0.17	0.76
		PM_{10}	0.17	0.76
		$PM_{2.5}$	0.17	0.76
		SO_2	0.34	0.06
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.04	0.19
H-11	14.4 MMBtu/hr – Ram VI Hot Oil Heater	VOC	0.08	0.34
		NO_x	0.65	2.84
		CO	0.53	2.33
		PM	0.11	0.47
		PM_{10}	0.11	0.47
		$PM_{2.5}$	0.11	0.47
		SO_2	0.21	0.04
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.03	0.12
H-12	19.6 MMBtu/hr – Ram V Molecular Sieve Regenerator Heater	VOC	0.11	0.46
		NO_x	0.88	3.86
		CO	0.72	3.17
		PM	0.15	0.64
		PM_{10}	0.15	0.64
		$PM_{2.5}$	0.15	0.64
		SO_2	0.29	0.05
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.04	0.16
H-14	13.8 MMBtu/hr – HP Stabilizer Hot Oil Heater #1	VOC	0.07	0.33
		NO_x	0.62	2.72
		CO	0.51	2.23

Emission Sources - Maximum Allowable Emission Rates

		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.20	0.04
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.03	0.11
H-15	13.8 MMBtu/hr – HP Stabilizer Hot Oil Heater #2	VOC	0.07	0.33
		NO_x	0.62	2.72
		CO	0.51	2.23
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.20	0.04
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.03	0.11
H-16	23.4 MMBtu/hr – Ram IV Molecular Sieve Regenerator Heater	VOC	0.13	0.55
		NO_x	1.05	4.61
		CO	0.86	3.79
		PM	0.17	0.76
		PM_{10}	0.17	0.76
		$PM_{2.5}$	0.17	0.76
		SO_2	0.34	0.06
		H_2S	<0.01	<0.01
		Benzene	<0.01	<0.01
		HAP	0.04	0.19
H-17	Amine Hot Oil Heater #2	VOC	0.50	2.17
		NO_x	3.31	14.49
		CO	3.40	14.88
		PM	0.68	3.00
		PM_{10}	0.68	3.00
		$PM_{2.5}$	0.68	3.00

Emission Sources - Maximum Allowable Emission Rates

		SO_2	0.37	1.60
		H_2S	< 0.01	0.02
		Benzene	< 0.01	< 0.01
		HAP	0.17	0.75
RGH-3	Ram III Regenerator Heater	VOC	0.13	0.55
		NO_x	0.84	3.69
		CO	0.86	3.79
		PM	0.17	0.76
		PM_{10}	0.17	0.76
		$PM_{2.5}$	0.17	0.76
		SO_2	0.01	0.06
		H_2S	< 0.01	< 0.01
		Benzene	< 0.01	< 0.01
		HAP	0.04	0.19
RTO-4	Regenerative Thermal Oxidizer 4	VOC	1.75	7.68
		NO_x	0.72	3.16
		CO	6.19	27.09
		PM	0.08	0.37
		PM_{10}	0.08	0.37
		$PM_{2.5}$	0.08	0.37
		SO_2	22.80	99.85
		H_2S	0.24	1.06
		Benzene	0.80	3.50
		HAP	1.22	5.33
F-1B	Flare 1B MSS Flare	VOC	424.58	44.21
		NO_x	124.05	12.73
		CO	247.64	25.41
		SO_2	2.09	0.03
		H_2S	0.02	< 0.01
		Benzene	0.31	0.02
		HAP	2.19	0.20
F-2R	Acid Gas Flare 2 (8)	VOC	3.27	0.72
		NO_x	6.72	1.47

Emission Sources - Maximum Allowable Emission Rates

		CO	57.62	12.64
		SO_2	22.80	4.99
		H_2S	0.24	0.05
		Benzene	1.60	0.35
		HAP	2.43	0.53
FUG	Ramsey Plant IV-VI Fugitive Emissions (5)	VOC	9.91	43.40
		Benzene	0.02	0.09
		HAP	0.12	0.53
GEN-01	Emergency Generator	VOC	0.09	0.02
		NO_x	0.25	0.06
		CO	1.27	0.32
		PM	0.06	0.02
		PM_{10}	0.06	0.02
		$PM_{2.5}$	0.06	0.02
		SO_2	0.05	<0.01
		Benzene	<0.01	<0.01
		HAP	0.10	0.03
MSS-PAINT2	MSS Painting Emissions	VOC	22.92	0.28
MSS-MISC2	Default MSS Emissions	VOC	0.07	0.29
		Benzene	<0.01	<0.01
		HAP	<0.01	<0.01
HOH-1	23 MMBtu/hr Ram II Hot Oil Heater	VOC	0.12	0.54
		NO_x	2.30	10.07
		CO	1.70	7.45
		PM	0.17	0.75
		PM_{10}	0.17	0.75
		$PM_{2.5}$	0.17	0.75
		SO_2	0.10	0.45
		H_2S	< 0.01	< 0.01
		Benzene	< 0.01	< 0.01
		HAP	0.04	0.19
RGH-1	14.8 MMBtu/hr Ram II Mole Sieve Regen Heater	VOC	0.08	0.35
		NO_x	1.48	6.48
		CO	1.10	4.80

Emission Sources - Maximum Allowable Emission Rates

		PM	0.11	0.48
		PM_{10}	0.11	0.48
		$PM_{2.5}$	0.11	0.48
		SO_2	0.07	0.29
		H_2S	< 0.01	< 0.01
		Benzene	< 0.01	< 0.01
		HAP	0.03	0.12
RGH-2	36 MMBtu/hr Ram III Mole Sieve Regen Heater / HOH	VOC	0.19	0.85
		NO_x	3.60	15.77
		CO	2.66	11.67
		PM	0.27	1.17
		PM_{10}	0.27	1.17
		$PM_{2.5}$	0.27	1.17
		SO_2	0.16	0.70
		H_2S	< 0.01	0.01
		Benzene	< 0.01	< 0.01
		HAP	0.07	0.29
COMP-05	Plant II Residue Compressor Engine 05 - G3516B	VOC	2.05	8.97
		NO_x	1.52	6.66
		CO	2.68	11.73
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.01	0.03
		Benzene	< 0.01	0.02
		HAP	0.23	1.02
COMP-06	Plant II Residue Compressor Engine 06 - G3516B	VOC	2.05	8.97
		NO_x	1.52	6.66
		CO	2.68	11.73
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.01	0.03

Emission Sources - Maximum Allowable Emission Rates

		Benzene	< 0.01	0.02
		HAP	0.23	1.02
COMP-07	Plant II Residue Compressor Engine 07 - G3516B	VOC	2.05	8.97
		NO_x	1.52	6.66
		CO	2.68	11.73
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.01	0.03
		Benzene	< 0.01	0.02
		HAP	0.23	1.02
COMP-08	Plant II Residue Compressor Engine 08 - G3516B	VOC	2.05	8.97
		NO_x	1.52	6.66
		CO	2.68	11.73
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.01	0.03
		Benzene	< 0.01	0.02
		HAP	0.23	1.02
COMP-09	Plant II Residue Compressor Engine 09 - G3516B	VOC	2.05	8.97
		NO_x	1.52	6.66
		CO	2.68	11.73
		PM	0.10	0.45
		PM_{10}	0.10	0.45
		$PM_{2.5}$	0.10	0.45
		SO_2	0.01	0.03
		Benzene	< 0.01	0.02
		HAP	0.23	1.02
COMP-10	Plant III Residue Compressor Engine 10 - G3612LE	VOC	5.32	23.31
		NO_x	3.91	17.14
		CO	6.89	30.17
		PM	0.24	1.03

Emission Sources - Maximum Allowable Emission Rates

		PM_{10}	0.24	1.03
		$PM_{2.5}$	0.24	1.03
		SO_2	0.01	0.06
		Benzene	0.01	0.05
		HAP	0.60	2.62
COMP-11	Plant III Residue Compressor Engine 11 - G3612LE	VOC	5.32	23.31
		NO_x	3.91	17.14
		CO	6.89	30.17
		PM	0.24	1.03
		PM_{10}	0.24	1.03
		$PM_{2.5}$	0.24	1.03
		SO_2	0.01	0.06
		Benzene	0.01	0.05
		HAP	0.60	2.62
COMP-12	Plant III Residue Compressor Engine 12 - G3612LE	VOC	5.32	23.31
		NO_x	3.91	17.14
		CO	6.89	30.17
		PM	0.24	1.03
		PM_{10}	0.24	1.03
		$PM_{2.5}$	0.24	1.03
		SO_2	0.01	0.06
		Benzene	0.01	0.05
		HAP	0.60	2.62
COMP-13	Plant III Residue Compressor Engine 13 - G3612LE	VOC	5.32	23.31
		NO_x	3.91	17.14
		CO	6.89	30.17
		PM	0.24	1.03
		PM_{10}	0.24	1.03
		$PM_{2.5}$	0.24	1.03
		SO_2	0.01	0.06
		Benzene	0.01	0.05
		HAP	0.60	2.62
COMP-14	Plant III Residue Compressor Engine 14 - G3612LE	VOC	5.32	23.31

Emission Sources - Maximum Allowable Emission Rates

		NO_x	3.91	17.14
		CO	6.89	30.17
		PM	0.24	1.03
		PM_{10}	0.24	1.03
		$PM_{2.5}$	0.24	1.03
		SO_2	0.01	0.06
		Benzene	0.01	0.05
		HAP	0.60	2.62
C-1	Standby generator	VOC	0.88	1.92
		NO_x	1.52	3.33
		CO	6.08	13.33
		PM	0.10	0.22
		PM_{10}	0.10	0.22
		$PM_{2.5}$	0.10	0.22
		SO_2	0.04	0.08
		H_2S	< 0.01	< 0.01
		Benzene	< 0.01	0.01
		HAP	0.73	1.59
C-2	Standby generator	VOC	1.45	3.18
		NO_x	2.47	5.41
		CO	9.89	21.65
		PM	0.15	0.32
		PM_{10}	0.15	0.32
		$PM_{2.5}$	0.15	0.32
		SO_2	0.06	0.12
		H_2S	< 0.01	< 0.01
		Benzene	0.01	0.01
		HAP	0.91	1.98
TL-1	Crude Loading	VOC	2.21	5.15
		Benzene	0.01	0.02

Emission Sources - Maximum Allowable Emission Rates

		HAP	0.16	0.37
TL-2	Produced Water Loading	VOC	6.02	0.86
		HAP	< 0.01	< 0.01
COMB-1	Vapor Combustor (controls TK-1 through TK-8, TL-1)	VOC	3.63	11.42
		NO_x	0.53	1.91
		CO	1.06	3.82
		PM	0.03	0.10
		PM_{10}	0.03	0.10
		$PM_{2.5}$	0.03	0.10
		Benzene	0.02	0.06
		HAP	0.33	1.05
PIG-1	Pipeline Pigging	VOC	52.56	16.40
		HAP	1.41	0.44
MSS-BD2	Residue Compressor Blowdown Emissions	VOC	< 0.01	0.01
		Benzene	< 0.01	< 0.01
		HAP	< 0.01	< 0.01
MSS-BD2b	Ramsey II-III Cryogenic Blowdown Emissions	VOC	88.85	0.25
MSS-VESSEL	Process Equipment Blowdown Emissions	VOC	79.72	0.45
		Benzene	0.13	< 0.01
		HAP	1.57	0.01
MSS-PAINT	MSS Painting Emissions	VOC	22.92	0.28
		HAP	22.92	0.28
MSS-MISC	Default VOC emissions for Miscellaneous MSS activities	VOC	0.06	0.27
		Benzene	< 0.01	< 0.01
		HAP	< 0.01	0.02

(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

Emission Sources - Maximum Allowable Emission Rates

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
HAP	-	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
H_2S	-	hydrogen sulfide

(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) Hourly blowdown emissions are based on a single blowdown in a single hour.
(7) Annual blowdown emissions are based on an average of 1 event per month and estimated duration of blowdown of 1 hour.
(8) During RTO down time emissions from Amine Still Vents shall be routed to Acid Gas Flare 2 (F-2R). The allowable downtimes for the RTOs are described in Special Condition No. 15.

Date: March 22, 2019