

# Emission Sources - Maximum Allowable Emission Rates

Permit Number 21878

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)
PSA-FUG	Pressure Swing Adsorption Unit Fugitives (5)	CO	0.95	4.20
A	Fired Gas Preheater A (9)	NO <sub>x</sub>	1.92	8.40
		PM	0.48	2.10
		SO <sub>2</sub>	0.81	3.60
		CO	1.15	5.10
		VOC	0.09	0.40
		Ammonia	0.01	0.03
		Cyanide	0.01	0.01
B	Fired Gas Preheater B (9)	NO <sub>x</sub>	1.92	8.40
		PM	0.48	2.10
		SO <sub>2</sub>	0.81	3.60
		CO	1.15	5.10
		VOC	0.09	0.40
		Ammonia	0.01	0.03
		Cyanide	0.01	0.01
101	POX Startup Burner A (9)	NO <sub>x</sub>	0.78	3.44
		PM	0.06	0.27
		SO <sub>2</sub>	0.11	0.49
		CO	0.70	2.90
		VOC	0.04	0.19

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201	POX Startup Burner B (9)	NOx	0.78	3.44
		PM	0.06	0.27
		SO <sub>2</sub>	0.11	0.49
		CO	0.70	2.90
		VOC	0.04	0.19
D	Warm Flare routine, MSS, Annual and Turnaround Degassing for Maintenance (9)	CO	1,047.80	69.51
		NOx	32.40	3.27
		SO <sub>2</sub>	1.10	0.51
		VOC	0.73	0.01
E	Cold Flare, MSS, Annual and Turnaround Degassing for Maintenance (9)	CO	786.62	53.73
		NOx	15.42	2.94
		SO <sub>2</sub>	0.01	0.01
		VOC	0.62	0.01
F	Plant Fugitives (5)	CO	14.47	62.85
		VOC	0.35	1.51
		PM	13.28	1.43
		NOx	1.26	5.52
		SO <sub>2</sub>	0.18	0.79
		Argon	0.75	3.25
		FE(CO) <sub>5</sub>	0.01	0.01
G	Liquid Oxygen Vaporizers (9)	NOx (6)	2.04	8.40
		NOx	1.21	5.30
		PM	0.24	1.10
		SO <sub>2</sub>	0.23	1.00
		CO	0.55	2.40

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		VOC	0.05	0.20
H	Wastewater Equalization Tank (9)	VOC	0.01	0.01
		Cyanide	0.01	0.01
		Ammonia	0.02	0.09
		CO	0.14	0.60
I	Temperature Swing Adsorption Driers (9)	CO	0.29	1.30
		Fe(CO) <sub>5</sub>	0.06	0.01
J	MEA Storage Tank	MEA	0.02	0.07
K	HyCO-3 Cooling Tower	PM	2.39	10.45
L	ASU-GOX Cooling Water Tower	PM	2.79	12.20
M	ASU Cooling Water Tower	PM	7.62	33.37
N1, N2	2 HYCO Deaerator Vents (9)	MEA	0.03	0.13
O	Vacuum Pump (9)	CO	5.11	0.94
P1, P2, P3, P4, P5, and P6	6 Emergency Generators (9)	NOx	153.50	3.99
		CO	34.61	0.90
		SO <sub>2</sub>	22.70	0.59
		PM	5.77	0.15
		VOC	5.77	0.15
P7	Emergency Diesel Generator (9)	NOx	2.84	0.14
		CO	0.60	0.03
		VOC	0.12	0.01
		PM	0.10	0.01
		SO <sub>2</sub>	1.00	0.05
Q	Liquid Nitrogen Vaporizer (9)	NOx	<0.01	<0.01

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		CO	<0.01	<0.01
		VOC	<0.01	<0.01
		PM <sub>10</sub>	<0.01	<0.01
		SO <sub>2</sub>	<0.01	<0.01
GT-1	Gas Turbine No. 1 (7) (9)	NO <sub>x</sub>	32.20	
		CO	41.80	
		VOC	2.40	
		PM <sub>10</sub>	12.75	
		SO <sub>2</sub>	4.29	
GT-2	Gas Turbine No. 2 (7) (9)	NO <sub>x</sub>	32.20	
		CO	41.80	
		VOC	2.40	
		PM <sub>10</sub>	12.75	
		SO <sub>2</sub>	4.29	
GT-3	Gas Turbine No. 3 (7) (9)	NO <sub>x</sub>	32.20	
		CO	41.80	
		VOC	2.40	
		PM <sub>10</sub>	12.75	
		SO <sub>2</sub>	4.29	
GT-4	Gas Turbine No. 4 (7) (9)	NO <sub>x</sub>	32.20	
		CO	41.80	
		VOC	2.40	
		PM <sub>10</sub>	12.75	
		SO <sub>2</sub>	4.29	
GT-1, 2,3,and 4	Gas Turbines 1-4 (8) (9)	NO <sub>x</sub>		70.40

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		CO		50.12
		VOC		2.92
		PM <sub>10</sub>		27.44
		SO <sub>2</sub>		8.56
FUG_DEGAS	Fugitive Degassing for Maintenance (Annual & Turnaround) and Pump, Valve and Piping Maintenance and Repair (9)	CO	1.02	0.01
		VOC	1.61	0.01
CARBFLTMSS	Carbon Filter Flush and Changeout (9)	VOC	0.40	<0.01
INS	Fuel Vent, Calibration & Maintenance of Instrumentation and Meters (9)	VOC	0.28	0.08

- (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<sub>x</sub> - total oxides of nitrogen
- SO<sub>2</sub> - sulfur dioxide
- PM - total particulate matter, suspended in the atmosphere, including PM<sub>10</sub> and PM<sub>2.5</sub>, as represented
- PM<sub>10</sub> - total particulate matter equal to or less than 10 microns in diameter, including PM<sub>2.5</sub>, as represented
- CO - carbon monoxide
- Fe(CO)<sub>5</sub> - iron pentacarbonyl
- MEA - monoethanolamine
- (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) Firing propane (only used during upset or routine maintenance periods).
- (7) Hourly rates are based upon maximum firing case at peak load, approximately 104 percent of base load, except for VOC and CO which are based on turndown case or 75 percent load.
- (8) Annual emissions are based on the sum of emissions for GT 1-4 at a firing rate of 2,563,000 (MMBtu) per year higher heating value.
- (9) Includes routine, startup and shutdown emissions or is associated with MSS activities.

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Date: June 29, 2012