

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Flexible Permit Number 18897

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. 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)	<u>Emission Rates *</u>	
			lb/hr	TPY**

Routine Operating Emission Caps

VOC SOURCES:

Boilers, Furnaces, Heaters,
Compressors, Incinerator,
Thermal Oxidizer, FCCU/WGS,
Fire Water Pump, Thermal Combustors,
Cooling Towers (4), Fugitive Emissions (4),
Loading Racks, Fixed-Roof Storage Tank Groups,
Floating Roof Storage Tank Groups, and
Carbon Canister Systems

EMISSIONS CAP: through 01/01/2009	VOC	698	1,118
EMISSIONS CAP: through 01/01/2011	VOC	494	930
EMISSIONS CAP: through 04/04/2013	VOC	488	930
EMISSIONS CAP: after 04/04/2013	VOC	403	930

NO_x SOURCES:

Boilers, Furnaces, Heaters,
Compressors, Incinerator,
Thermal Oxidizer, FCCU/WGS,
Fire Water Pump, and Thermal Combustors

EMISSIONS CAP: through 01/01/2009	NO _x	609	1,374
EMISSIONS CAP: through 01/01/2011	NO _x	377	937
EMISSIONS CAP: through 04/04/2013	NO _x	325	853
EMISSIONS CAP: after 04/04/2013	NO _x	205	535

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			lb/hr	TPY**

CO SOURCES:

Boilers, Furnaces, Heaters,
Compressors, Incinerator,
Thermal Oxidizer, FCCU/WGS,
Fire Water Pump, Thermal Combustors,
and Absorber

EMISSIONS CAP: through 01/01/2009	CO	270	630
EMISSIONS CAP: through 01/01/2011	CO	203	556
EMISSIONS CAP: through 04/04/2013	CO	187	526
EMISSIONS CAP: after 04/04/2013	CO	171	479

PM SOURCES:

Boilers, Furnaces, Heaters,
Compressors, Incinerator,
Thermal Oxidizer,
FCCU/WGS, Fire Water Pump,
Thermal Combustors,
and Solid Waste Loading

EMISSIONS CAP: through 01/01/2009	PM	54	105
EMISSIONS CAP: through 01/01/2011	PM	53	99
EMISSIONS CAP: through 04/04/2013	PM	53	99
EMISSIONS CAP: after 04/04/2013	PM	53	99

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			lb/hr	TPY**

SO₂ SOURCES:

Boilers, Furnaces, Heaters,
Compressors, Incinerator,
Thermal Oxidizer, FCCU/WGS,
Fire Water Pump,
and Thermal Combustors

EMISSIONS CAP: through 01/01/2009	SO ₂	230	525
EMISSIONS CAP: through 01/01/2011	SO ₂	157	375
EMISSIONS CAP: through 04/04/2013	SO ₂	157	375
EMISSIONS CAP: after 04/04/2013	SO ₂	157	375

H₂S SOURCES:

Boilers, Furnaces, Heaters,
Thermal Oxidizer,
Thermal Combustors,
Carbon Canister EPN PK-854,
Fugitive Emission EPNs F-16N, F-39, F-10N, F-23,
F-71-72, F-1/2, F-11, and F-13 (4),
and Sulfur Loading and Storage

EMISSIONS CAP: through 01/01/2009	H ₂ S	3	6
EMISSIONS CAP: through 01/01/2011	H ₂ S	2	4
EMISSIONS CAP: through 04/04/2013	H ₂ S	2	4
EMISSIONS CAP: after 04/04/2013	H ₂ S	2	4

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY **

H₂SO₄ SOURCES:

FCCU/WGS

EMISSIONS CAP: through 01/01/2009	H ₂ SO ₄	4	18
EMISSIONS CAP: through 01/01/2011	H ₂ SO ₄	4	18
EMISSIONS CAP: through 04/04/2013	H ₂ SO ₄	4	18
EMISSIONS CAP: after 04/04/2013	H ₂ SO ₄	4	18

NH₃ SOURCES:

Carbon Canister EPN PK-854

EMISSIONS CAP: through 01/01/2009	NH ₃	0.01	0.06
EMISSIONS CAP: through 01/01/2011	NH ₃	0.01	0.06
EMISSIONS CAP: through 04/04/2013	NH ₃	0.01	0.06
EMISSIONS CAP: after 04/04/2013	NH ₃	0.01	0.06

HCl SOURCES:

pH Neutralization

EMISSIONS CAP: through 01/01/2009	HCl	0.77	0.15
EMISSIONS CAP: through 01/01/2011	HCl	0.10	0.02
EMISSIONS CAP: through 04/04/2013	HCl	0.10	0.02
EMISSIONS CAP: after 04/04/2013	HCl	0.10	0.02

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Benzene SOURCES:

Fugitive Emissions EPNs LE-FUG, F-16N,
 F-39, F-41, TNK-FUG, F-1/2, F-3/4, F-8,
 F-11, F-16S, F-22, and FUG (4),
 Thermal Oxidizer, Carbon Canister PK-854,
 Carbon Canister CA-SK,
 Fixed-Roof Storage Tank Groups,
 Floating Roof Storage Tank Groups,
 and Cooling Towers.

EMISSIONS CAP: through 01/01/2009	Benzene	1.75	5.90
EMISSIONS CAP: through 01/01/2011	Benzene	1.60	5.30
EMISSIONS CAP: through 04/04/2013	Benzene	1.60	5.27
EMISSIONS CAP: after 04/04/2013	Benzene	1.60	5.24

Individual Emission Rate Limits

D-2914	Relief Gas North Main Flare (6)	VOC	9.86	
		NO _x	18.48	
		CO	46.20	
		SO ₂	72.90	
		H ₂ S	0.77	
R-2911	Rheniformer Flare (6)	VOC	0.01	
		NO _x	18.24	
		CO	46.35	
		SO ₂	0.01	
		H ₂ S	0.77	
D-2914/R-2911	North Main Flare/ Rheniformer Flare (6)	VOC	0.13	
		NO _x	1.42	
		CO	5.58	
		SO ₂	0.45	
		H ₂ S	0.01	
112	Plant Emergency/AAG/ Main South Flare (5)	VOC	0.01	0.01
		NO _x	0.02	0.07
		CO	0.11	0.49
		SO ₂	0.01	0.01

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XF8801/2	Steam Reformer Heater F-8801	VOC	0.70	2.61
	Steam Reformer Heater F-8802	NO _x	4.52	16.96
		CO	4.52	16.96
		PM	0.96	3.61
		SO ₂	3.81	1.92
		H ₂ S	0.08	0.04
XF3903	Diesel Charge Heater	VOC	0.57	2.48
		NO _x	3.68	16.10
		CO	3.68	16.10
		PM	0.79	3.45
		SO ₂	3.05	4.64
		H ₂ S	0.03	0.01
XF3903	Diesel Charge Heater (8)	CO	73.50	0.22
H2FUG	Hydrogen Plant No. 1 Fugitives (4)	CO	0.01	0.06
		VOC	1.54	1.69
		H ₂ S	0.01	0.01
9	Boiler No. 4	CO	1.05	3.51
		NO _x	3.95	13.22
		NH ₃	0.64	2.17
		PM/PM ₁₀ /PM _{2.5} (12)	4.57	11.35
		SO ₂	8.11	10.36
		H ₂ SO ₄	1.99	2.54
		TRS	0.68	0.93
		VOC	1.43	4.88
		H ₂ S	0.03	0.11
9	Boiler No. 4 (7)	CO	25.62	1.43
		NO _x	57.95	3.25
		VOC	1.43	0.10
		PM	4.57	0.32
		SO ₂	0.05	0.01
F-24	Boiler No. 4 Process Fugitives (4)	VOC	0.03	0.12
		H ₂ S	0.01	0.01

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XF-9201	Benzene saturation Unit Charge Heater	CO	1.26	5.52
		NO _x	1.26	5.52
		VOC	0.19	0.85
		PM	0.27	1.18
		SO ₂	1.06	1.86
		H ₂ S	0.01	0.02
XF-9201	Benzene Saturation Unit Charge Heater (9)	CO	25.20	0.45
XF-9202	Benzene Saturation Unit Reboiler	CO	1.33	5.83
		NO _x	1.33	5.83
		VOC	0.21	0.90
		PM	0.29	1.25
		SO ₂	1.12	1.96
		H ₂ S	0.01	0.02
XF-9202	Benzene Saturation Unit Reboiler (9)	CO	26.60	0.48
XF-9101/2	Hydrogen Plant No. 2 Steam Reforming Heaters Nos. 1 and 2	CO	4.56	16.86
		NO _x	4.56	16.86
		VOC	0.70	2.60
		PM	0.98	3.62
		SO ₂	1.42	1.96
		H ₂ S	0.02	0.02
XF-9101/2	Hydrogen Plant No. 2 Steam Reforming Heaters Nos. 1 and 2 (9)	CO	91.00	1.64
F-91	Hydrogen Plant No. 2 Fugitives (4)	VOC	0.01	0.06
		H ₂ S	0.01	0.01
		CO	0.01	0.06
F-91MSS	Hydrogen Plant (10)	VOC	157.61	0.79
		PM	0.01	0.01
F-92	Benzene Saturation Unit Fugitives (4)	VOC	1.87	8.20

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F-92MSS	Benzene Saturation	VOC	157.61	0.79
	Unit (10)	PM	0.01	0.01

Planned Maintenance, Startup, and Shutdown (MSS) Emission Rate Limits

MSS CAP (11)	Sitewide MSS Sources Excluding Flares	VOC	485.89	70.41
		NO _x	3.87	19.92
		CO	209.09	13.19
		SO ₂	21.36	1.68
		PM ₁₀ /PM _{2.5} (10)	61.07	5.79
		H ₂ S	0.05	0.03
D-2914/R-2911	North Flares [Including North Relief Gas Flare (EPN D-2914) and Rheniformer Flare (EPN R-2911)]	VOC	92.90	0.89
		NO _x	41.24	9.81
		CO	164.24	30.55
		SO ₂	587.61	5.66
		H ₂ S	6.24	0.06
112	South Main Flare	VOC	227.54	2.38
		NO _x	48.38	3.24
		CO	192.70	12.92
		SO ₂	1471.87	23.27
		H ₂ S	15.64	0.25

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources, use an 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
- CO - carbon monoxide
- PM - particulate matter, suspended in the atmosphere, including PM₁₀.
- PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no PM greater than 10 microns is emitted.
- PM_{2.5} - particulate matter equal to or less than 2.5 microns in diameter
- SO₂ - sulfur dioxide
- H₂S - hydrogen sulfide
- H₂SO₄ - sulfuric acid
- NH₃ - ammonia
- HCl - hydrochloric acid
- TRS - total reduced sulfur

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- (4) Emission rates are an estimate and enforceable through compliance with the applicable special condition(s) and permit application representations.
- (5) Only pilot emissions are authorized for these combustion sources.
- (6) Planned MSS emissions associated with authorized activities that are described in Special Condition No. 39.
- (7) Planned startup and shutdown emissions for periods not to exceed 144 hours on a rolling 12-month basis only.
- (8) Planned MSS emissions are based on 12 hours of startup time on a rolling 12-month basis.
- (9) MSS activities and emission points authorized by this permit and identified in Attachment C and, by reference, also Attachments A, B, and D
- (10) 100 percent of the PM₁₀ may be PM_{2.5}

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

_____Hrs/day _____Days/week _____Weeks/year or 8,760 Hrs/year

** Compliance with annual emission limits is based on a calendar year basis for the first eight years after this permit was issued and a rolling 12-month basis thereafter.

Dated July 7, 2011_