

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 1733A

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**
1-1-Barge	Capro Barge Loading Fugitives	Caprolactam	0.07	0.15
7-1-1	Neutralization Standpipe	VOC	0.01	0.01
7-1-2	Neutralization Standpipe	VOC	0.01	0.01
7-1-8	Benzene Scrubber Vent S-300	Benzene	0.01	0.01
		VOC	0.02	0.03
7-1-9	Slurry Settling Drum	PM	0.01	0.01
7-1-11	Wash Water Storage Tank	VOC	0.07	0.01
7-1-12	Wash Water Storage Tank	VOC	0.01	0.01
7-1-15	Neutralization Separator Drum	VOC	0.49	0.01
7-1-16	Neutralization Circulation Drum	VOC	0.54	0.01
7-1-17	Neutralization Crude Storage Tank	VOC	1.00	0.09
7-1-20	Kettle Dump Drum	VOC	0.01	0.01
7-1-21	Overhead Drum	VOC	0.01	0.01
7-1-23	Vessel D-525A2	VOC	1.32	0.04
7-1-25	Storage Tank Vent	VOC	6.42	0.34

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
7-1-26	Kettles Overhead Tank	VOC	0.01	0.01
7-1-27	Bottoms Drum	VOC	0.18	0.01
7-1-28	Check Tank	VOC	0.01	0.01
7-1-29	Anone Surge Tank	VOC	6.65	0.06
7-1-31	Oxime Holdup Tank	VOC	0.22	0.01
7-1-32	Neutralization Separator Tank Drum	VOC	0.62	0.01
7-1-33	Neutralization Circulation Drum	VOC	0.32	0.01
7-1-34	Neutralization Crude Storage Tank	VOC	0.05	0.01
7-1-36	Overheads Drum	VOC	0.02	0.01
7-1-37	Bottoms Tank	VOC	0.10	0.01
7-1-38	Product Check Tank	VOC	0.15	0.01
7-1-40	Overheads Drum	VOC	0.02	0.01
7-1-41	Poly Return Storage Tank	VOC	0.01	0.01
7-1-42	Oxime Salt Storage Tank	VOC	0.01	0.01
7-1-43	Mother Liquor Storage Tank	VOC	0.01	0.01
7-1-45	Product Check Tank	VOC	0.01	0.01
7-1-46	SO ₄ Scrubber S-400	PM	4.86	21.29
		VOC	4.98	21.81

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
7-1-48	Jet Vent	VOC	0.02	0.09
7-1-50	Hot Well Tank	VOC	0.01	0.01
7-1-51	Hot Well Tank	VOC	0.01	0.01
7-1-53	Hot Well Tank	VOC	0.01	0.01
7-1-54	Hot Well Tank	VOC	0.01	0.01
7-1-55	Hot Well Tank	VOC	0.01	0.01
7-1-56	Hot Well Tank	VOC	0.01	0.01
7-1-58	Jet Vent	VOC	0.02	0.10
7-1-59	Jet Vent	VOC	0.02	0.10
7-1-60	Jet Vent	VOC	0.01	0.01
7-1-61	Jet Vent	VOC	0.01	0.01
7-1-62	Jet Vent	VOC	0.02	0.08
7-1-63	Jet Vent	VOC	0.01	0.03
7-1-64	N ₂ Drying Tower	VOC	0.01	0.01
7-1-65	Vacuum System	VOC	0.01	0.01

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
7-1-66	Tank Farm Process Fugitives (4)	Benzene	0.42	1.84
		NH ₃	0.03	0.14
		VOC	0.59	2.57
7-1-71/7-1-72	Rail and Truck Loading Losses	Caprolactam	3.15	0.47
7-1-73	SO ₂ Scrubber S-500	Benzene	0.14	0.63
		NH ₃	0.05	0.21
		SO ₂	3.30	14.47
		VOC	0.64	1.77
7-1-74	Ammonium Sulfate Loading	PM ₁₀	0.23	0.34
		VOC	0.04	0.06
7-1-75	Kettle Dump	VOC	1.13	0.09
7-1-80	D600	VOC	0.22	0.02
7-1-90	Cooling Tower CT-700 (4)	VOC	2.10	9.20
7-1-91	Extract Storage Drum	VOC	0.01	0.01
7-1-101	D409 Neutralization Circulation Drum	Caprolactam	0.15	0.01
7-2-2	Process Fugitives (4)	NH ₃	0.06	0.24
		VOC	1.52	6.67
7-2-3/7-2-4	Truck and Rail Loading Losses	VOC	16.72	1.20

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
7-2-6	Dehydro Methane Burner BR360	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10
7-2-7	Dehydro Methane Burner BR370	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10
7-2-8	Dilute Acid Water Tank	Organic Acids	0.01	0.01
7-2-9	Anolon Storage Tank	VOC	0.60	0.28
7-2-11	Tech Anol Feed Tank	VOC	0.02	0.06
7-2-12	Tech Anol Feed Tank	VOC	0.02	0.06
7-2-13	D-Anone Storage Tank	VOC	11.92	2.07
7-2-14	Dehydro Feed Tank	VOC	0.20	0.02
7-2-16	Cyclohexanol Tank	VOC	0.20	0.13
7-2-17	Cyclohexanone Storage Tanks	VOC	8.49	0.73
7-2-18	Cyclohexanone Storage Tank	VOC	1.00	0.66
7-2-19	Cyclohexanone Storage Tank	VOC	1.00	0.66
7-2-21	Concentrated Catalyst Tank	VOC	0.36	0.01
7-2-22	Cyclohexanone Storage Tank	VOC	4.24	0.18

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
7-2-23	Cyclohexanone Storage Tank	VOC	4.24	0.18
7-2-24	Anolon Storage Tank	VOC	0.02	0.03
7-2-25	Dehydro Feed Tank	VOC	21.71	2.12
7-2-27	Dilute Catalyst Tank	VOC	1.22	0.02
7-2-40	Cyclohexanone Tank	VOC	2.48	0.65
7-2-101	Dehydrogenation Vent	VOC	18.94	0.45
9-1-24	Cyclohexane Tank	VOC	0.41	0.53
9-1-25	Cyclohexane Tank	VOC	0.26	0.66
9-1-26	Cyclohexane Tank	VOC	0.26	0.66
9-1-27	Concentrated Acid Water Tank	Organic Acids	0.08	0.36
		VOC	0.85	3.70
11-1-2	Catalytic Incinerator (7)	CO	17.78	75.86
		NO _x	0.03	0.13
		PM ₁₀	0.01	0.03
		VOC	28.29	108.22
11-1-3	Dehydro Methane Burner BR300	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
11-1-4	Dehydro Methane Burner BR310	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10
11-1-5	Dehydro Methane Burner BR320	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10
11-1-6	Dehydro Methane Burner BR330	CO	0.36	1.56
		NO _x	0.42	1.85
		PM ₁₀	0.03	0.14
		SO ₂	0.01	0.01
		VOC	0.02	0.10
11-1-9	Vent Condenser	VOC	4.30	2.09
11-1-21	EP 316/223 Tank	VOC	0.38	0.26
11-1-23	D-404B	VOC	0.06	0.20
11-1-25	Concentrated Catalyst Tank	VOC	0.77	0.01
11-1-26	Dilute Catalyst Tank	VOC	3.96	0.48
11-1-39	Dehydro Feed Tank	VOC	1.84	0.13
11-1-40	Heavies Cracking Feed	VOC	0.42	0.36

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
11-1-43	Dehydro Methane Burner BR340	CO	0.64	2.81
		NO _x	0.76	3.34
		PM ₁₀	0.06	0.25
		SO ₂	0.01	0.02
		VOC	0.04	0.18
11-1-47	Process Fugitives (4)	VOC	4.79	21.00
11-1-49	Process Fugitives (4)	NH ₃	0.12	0.52
11-1-50/11-1-51	Railcar and Truck Loading Losses	VOC	8.67	0.34
11-1-52	Off-Site Barge Loading	VOC	12.08	1.52
11-1-72	Cyclohexanone Tank	VOC	7.36	2.61
11-1-91	Cooling Tower CT-1100 (4)	VOC	0.63	2.76
11-1-100	Thermal Oxidizer R180	CO	37.44	13.11
		NO _x	14.91	4.50
		PM ₁₀	0.60	0.21
		SO ₂	0.05	0.02
		VOC	0.89	0.31
11-1-101	Dehydrogenation Vent	VOC	1.44	0.50
11-1-104	Anone 2 Low Pressure Vents	CO	140.00	1.60
		VOC	278.00	3.11
12-1-1	Vent Gas Flare	CO	0.02	0.10
		NO _x	121.51	532.20
		VOC	0.01	0.01

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
12-1-2	Burner Flare 1 FL-170B	CO	4.37	19.13
		NO	756.00	(5)
		NO _x	2.19	9.58
		VOC	0.09	0.39
12-1-29	Catalytic Converter Vent	PM ₁₀	0.01	0.01
12-1-30	Scrubber Vent	PM ₁₀	0.11	0.02
12-1-31	Catalyst Oven Vent	PM ₁₀	0.01	0.01
12-1-33	Catalyst Oven Vent	PM ₁₀	0.01	0.01
12-1-34	Catalyst Oven Vent	PM ₁₀	0.01	0.01
12-1-35	Catalyst Oven Vent	PM ₁₀	0.01	0.01
12-1-36	Catalyst Oven Vent	PM ₁₀	0.01	0.01
12-1-44	Catalyst Transfer Station	PM ₁₀	1.56	0.25
12-1-45	Process Fugitives (4)	NH ₃	0.20	0.87
12-1-46	Ammonia Flare	CO	0.28	1.24
		NH ₃	3.06	0.02
		NO _x	27.57	0.85
		VOC	0.01	0.03
12-1-47	Carbon Beds Normal Emissions and (6)	1, 1, Trichloroethane	1.90	0.18
		Carbon Tetrachloride	1.90	0.18
		VOC	2.36	0.23

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
12-1-48	Burner Flare 2 FL-171	CO	5.80	25.37
		NO	1172.00	(5)
		NO _x	2.90	12.71
		VOC	0.12	0.52
12-1-49	Nitric Acid Loading Losses	Nitric Acid	0.31	1.01
12-2-4	Cooling Tower CT-20 (4)	VOC	1.55	6.81
12-2-48	Deepwell Tank	VOC	0.01	0.01
12-2-49	Deepwell Tank	VOC	0.01	0.01
12-2-50	Deepwell Tank	VOC	0.01	0.01
12-2-51	Deepwell Tank	VOC	0.01	0.01
12-2-52	Deepwell Tank	VOC	0.01	0.01
12-2-53	Deepwell Tank	VOC	0.01	0.01
12-2-54	Deepwell Tank	VOC	0.01	0.01
14-1-1	Ammonium Sulfate Loading	PM	0.51	0.41
		VOC	0.09	0.07
14-1-8	Lactam Separator	VOC	0.05	0.01
14-1-9	Cooling Tower CT-30 (4)	VOC	0.84	3.68
14-1-10	Purge Drums	VOC	0.01	0.01
14-1-11	Overhead Drum	VOC	0.01	0.01
14-1-12	Centrifuge Feed Tank	VOC	0.01	0.01

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
14-1-13	Centrifuge Feed Tank	VOC	0.01	0.01
14-1-16	Storage Tank	VOC	0.07	0.01
14-1-20	Hot Well Tank	VOC	0.01	0.02
14-1-21	Hot Well Tank	VOC	0.01	0.01
14-1-22	Hot Well Tank	VOC	0.01	0.01
14-1-23	Hot Well Tank	VOC	0.01	0.01
14-1-27	Crude Lactam Storage	VOC	0.01	0.01
14-1-29	Extract Storage	VOC	0.01	0.01
14-1-30	Extract Storage	VOC	0.01	0.01
14-1-31	Extract Storage	VOC	0.01	0.01
14-1-32	Storage Tank	VOC	0.01	0.01
14-1-35	Extract Storage	VOC	0.15	0.01
14-1-36	Foreruns Receiver	VOC	0.22	0.07
14-1-37	Lights Storage	VOC	0.01	0.01
14-1-38	Kettle Feed Drum	VOC	0.01	0.01
14-1-39	Kettle Overheads	VOC	0.01	0.01
14-1-40	Mother Liquor Storage	VOC	0.01	0.01
14-1-41	Mother Liquor Receiver	VOC	0.01	0.01

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
14-1-44	Water Storage	VOC	0.01	0.01
14-1-45	Concentrated Storage	VOC	0.01	0.01
14-1-46	Oxime Salt Storage	VOC	0.12	0.03
14-1-47	Mother Liquor Storage	VOC	0.01	0.01
14-1-52-01	D203A	VOC	0.01	0.01
14-1-52-02	D203B	VOC	0.01	0.01
14-1-54	D-140/EV-140	VOC	0.01	0.01
14-1-56	Foreruns Tower Receiver	VOC	0.20	0.89
14-1-57	Finishing Tower	VOC	0.01	0.04
14-1-58	E-511	VOC	0.01	0.01
14-1-60	D-431	VOC	0.01	0.02
14-1-61	Kettle	VOC	0.02	0.10
14-1-64	E-720	VOC	0.01	0.05
14-1-68/14-1-83	Truck and Rail Loading	Caprolactam	3.15	1.88
14-1-69	Scrubber S601	PM	5.14	15.00
		VOC	4.98	21.81
14-1-70	Vacuum Jet	VOC	0.02	0.10
14-1-73	Capro 2 Process Fugitives (4)	Benzene	0.33	1.44
		NH ₃	0.02	0.09
		VOC	0.35	1.53

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AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
14-1-75	Benzene Crude Scrubber S-260	Benzene	0.01	0.01
		VOC	0.02	0.03
14-1-76	SO ₂ Scrubber S625	Benzene	0.25	1.10
		NH ₃	0.03	0.12
		SO ₂	2.32	10.17
		VOC	1.05	3.42
14-1-78	Overhead Drum	VOC	3.11	0.15
14-1-86	Kettle Dump Trailer	VOC	2.06	0.11
14-1-90	Extraction Tower Bottoms	VOC	0.01	0.01

Planned maintenance, startup, and shutdown (MSS) activities and emissions authorized below this heading

AN1MSS	Anone 1 MSS Emissions (6)	NH ₃	2.30	0.47
		PM/PM ₁₀	0.07	0.01
		VOC	57.57	1.33
AN1MSS	Anone 1 Shutdown Emissions (6)	NH ₃	1.22	0.10
		VOC	3.51	0.27
AN2MSS	Anone 2 MSS Emissions (6)	NH ₃	0.05	0.18
		PM/PM ₁₀	0.20	0.01
		VOC	217.50	6.30

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
AN2MSS	Anone 2 Shutdown Emissions (6)	NH ₃	0.92	0.09
		VOC	24.92	0.94
CP1MSS	Caprolactam 1 MSS Emissions (6)	H ₂ SO ₄	0.93	0.01
		NH ₃	1.20	0.48
		VOC	32.58	3.08
CP1MSS	Caprolactam 1 Shutdown Emissions (6)	NH ₃	0.21	0.08
		VOC	47.04	2.14
CP2MSS	Caprolactam 2 MSS Emissions (6)	H ₂ SO ₄	0.93	0.01
		NH ₃	1.20	0.49
		VOC	14.99	3.09
CP2MSS	Caprolactam 2 Shutdown Emissions (6)	NH ₃	0.20	0.08
		VOC	35.86	1.66
HAMSS	Hydroxylamine MSS Emissions (6)	NO	76.36	1.26
		NH ₃	1.84	0.93
		PM/PM ₁₀	0.12	0.01
		VOC	0.12	0.13
HAMSS	Hydroxylamine Shutdown Emissions (6)	NO	309.89	4.96
7-1-8	Caprolactam 1 MSS Emissions (6)	Benzene	0.18	0.04
7-1-8	Caprolactam 1 Shutdown Emissions (6)	Benzene	0.01	0.01
9-1-24	D-60A IFR MSS (6)	VOC	2.37	0.14
9-1-25	D-60B IFR MSS (6)	VOC	10.11	0.03
9-1-26	D-60C IFR MSS (6)	VOC	10.11	0.03

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
9-1-28	D-193B IFR MSS (6)	VOC	6.65	0.15
11-1-100	Anone 1 Shutdown Emissions (6)	CO	39.99	0.96
		NO _x	10.04	0.24
		VOC	36.06	1.17
11-1-100	Anone 2 Shutdown Emissions (6)	CO	66.45	2.81
		NO _x	16.69	0.71
		VOC	50.71	3.44
11-1-100	Anone 2 Incinerator MSS (6)	CO	37.44	6.29
		NO _x	14.91	2.16
		VOC	1.06	0.18
12-1-1	Hydroxylamine MSS Emissions (6)	NO	211.21	22.18
12-1-1	Hydroxylamine Shutdown Emissions (6)	CO	7.79	0.75
		NO _x	3.90	0.37
12-1-46	Hydroxylamine MSS Emissions (6)	CO	22.07	0.81
		NH ₃	27.53	1.28
		NO _x	16.34	0.73
		VOC	0.25	0.02
12-1-46	Hydroxylamine Shutdown Emissions (6)	CO	11.04	2.12
		NH ₃	2.08	0.40
		NO _x	2.33	0.45
		VOC	0.12	0.02
14-1-75	Caprolactam 2 MSS Emissions (6)	Benzene	0.18	0.03
14-1-75	Caprolactam 2 Shutdown Emissions (6)	Benzene	0.01	0.01

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

- (1) Emission point identification - either specific equipment designation or emission point number (EPN) from plot plan.
- (2) Specific point source name. For fugitive sources use area name or fugitive source name.
- (3)
 - CO - carbon monoxide
 - H₂SO₄ - sulfuric acid
 - NO_x - total oxides of nitrogen. This does not include any NO emissions listed separately.
 - NH₃ - ammonia
 - NO - nitric oxide
 - 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.
 - SO₂ - sulfur dioxide
 - VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1, including benzene.
- (4) Emission rate is an estimate and compliance is demonstrated by meeting the requirements of the applicable special conditions and permit application representations.
- (5) Total combined annual nonpilot/nonassist gas NO emissions from EPNs 12-1-2 and 12-1-48 shall not exceed 31.10 tons per year. Compliance with the annual emissions limit is based on a rolling 12-month average.
- (6) Planned maintenance, startup, and shutdown activity(ies).
- (7) Planned MSS activities and emissions of each air contaminant are authorized with normal emissions from this EPN.

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

Hrs/day 24 Days/week 7 Weeks/year 52

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated May 11, 2010