

## Appendix 1.C: Air Pollutant Emission Inventory Assessment

### 1.C.1 Tables for Section 1.4.5, Characterization of UGS Facility Emissions

Emissions data were reported to the California Air Resources Board and/or South Coast Air Quality Management District. The data include a list of all chemicals or chemical groupings reported across any or all of the 13 underground gas storage facilities in California from 1987 through 2015. Chemicals are listed from highest to lowest median annual emission by mass (pounds/year). Minimum, maximum, and median emissions are reported to at least one significant digit. Chemicals are reported by name and Chemical Abstract Service Registry Numbers (CASRN). For chemical groupings, Pollutant ID is reported as specified by the Air Toxics Hot Spots Program (AB 2588). Names of chemicals were normalized where possible, and all chemicals were reported with either a CASRN or Pollutant ID. Note: Criteria pollutants reported in tons/year were converted to pounds/year.

*Table 1.C-1. Annual emissions by mass (pounds/year) of chemicals reported to emissions inventories for underground gas storage facilities in California between 1987 and 2015.*

Chemical Name <sup>1,2</sup>	CASRN <sup>3</sup>	Emissions (pounds/year)		
		Median	Min	Max
1,1-Dichloroethane	75-34-3	0.6	0.002	85
1,1,1-Trichloroethane	71-55-6	1.1	1	1
1,1,2-Trichloroethane	79-00-5	2.9	0.003	17
1,2-Dichloropropane	78-87-5	2.4	0.002	15
1,2,4-Trimethylbenzene	95-63-6	69	0.3	325
1,3-Butadiene	106-99-0	57	0.004	244
1,3-Dichloropropene	542-75-6	2.6	0.4	14
2-Methyl naphthalene	91-57-6	6	0.0003	23
2,2,4-Trimethylpentane	540-84-1	21	1	36
Acenaphthene	83-32-9	0.18	0.00002	1
Acenaphthylene	208-96-8	0.9	0.00004	4
Acetaldehyde	75-07-0	392	0	4499
Acrolein	107-02-8	206	0.02	2833
Ammonia	7664-41-7	996	0.1	33907
Anthracene	120-12-7	0.03	0.00001	0.05
Arsenic	7440-38-2	0.0012	0.00001	0.03
Asbestos	1332-21-4	0.002	0.00001	0.01
Benzene	71-43-2	171	0.04	1970
Benzo[a]anthracene	56-55-3	0.018	0.000005	0.02

1 Chemical groupings, removed during analysis and discussion in Section 1.4.6;

2 Chemical grouping, but retained due to available toxicity information;

3 Pollutant ID reported rather than CASRN as assigned in the Air Toxics Hot Spots Program.

Chemical Name <sup>1,2</sup>	CASRN <sup>3</sup>	Emissions (pounds/year)		
		Median	Min	Max
Benzo[a]pyrene	50-32-8	0.0003	0.0000001	0.0004
Benzo[b]fluoranthene	205-99-2	0.024	0.0000001	0.1
Benzo[e]pyrene	192-97-2	0.0559	0.0000003	0.3
Benzo[g,h,i]perylene	191-24-2	0.0558	0.0000004	0.3
Benzo[k]fluoranthene	207-08-9	0.00021	0.0000001	0.0003
Beryllium	7440-41-7	0.00009	0.0001	0.0001
Biphenyl	92-52-4	17.8	5	31
Cadmium	7440-43-9	0.0011	0.00001	0.03
Carbon monoxide	630-08-0	45360	192	838656
Carbon tetrachloride	56-23-5	3.3	0.00003	27
Chlorine	7782-50-5	0.081	0.01	0.4
Chlorobenzene	108-90-7	1.2	0.0002	7
Chlorodifluoromethane	75-45-6	10	10	10
Chloroform	67-66-3	1.92	0.002	16
Chromium	7440-47-3	0.008	0.01	0.01
Chromium (VI)	18540-29-9	0.00007	0.000001	0.002
Chrysene	218-01-9	0.089	0.00001	0.5
Copper	7440-50-8	0.0022	0.0001	213
Diesel engine exhaust, PM	99013	4.1	0.4	1464
Diethylene glycol monobutyl ether	112-34-5	12.9	12.9	12.9
Dipropylene glycol methyl ether	34590-94-8	1.55	2	2
Ethylbenzene	100-41-4	25	0.01	291
Ethylene dibromide	106-93-4	4	0.00004	33
Ethylene dichloride	107-06-2	2.7	0.00002	17
Ethylene glycol	107-21-1	27	11	40
Ethylene glycol monobutyl ether	111-76-2	2.17	1	183
Fluoranthene	206-44-0	0.16	0.00001	1
Fluorene	86-73-7	0.8	0.00002	4
Fluorocarbons (chlorinated) <sup>1</sup>	11043	7.82	1	27
Formaldehyde	50-00-0	3159	0.2	27296
Gasoline vapors <sup>1</sup>	11013	38	38	38
Glycol ethers <sup>1</sup>	11153	0.8	0.8	1.6
Hexane	110-54-3	250	0.2	7638
Hydrochloric acid	7647-01-0	0.094	0.002	4
Hydrogen sulfide	6/4/83	0.013	0.01	0.4
Indeno[1,2,3-cd]pyrene	193-39-5	0.0004	0.0000001	0.001
Lead	7439-92-1	0.009	0.0001	0.2

1 Chemical groupings, removed during analysis and discussion in Section 1.4.6;

2 Chemical grouping, but retained due to available toxicity information;

3 Pollutant ID reported rather than CASRN as assigned in the Air Toxics Hot Spots Program.

Chemical Name <sup>1,2</sup>	CASRN <sup>3</sup>	Emissions (pounds/year)		
		Median	Min	Max
m-Xylene	108-38-3	190	0.2	801
Manganese	7439-96-5	0.0019	0.0001	7590
Mercury	7439-97-6	0.0008	0.00002	0.04
Methane	74-82-8	0.24	0.02	73
Methanol	67-56-1	213	0.04	1515
Methyl ethyl ketone	78-93-3	0.017	0.001	640
Methyl tert-butyl ether	1634-04-4	0.38	0.02	2
Methylene chloride	75-09-2	10.04	0.0001	48
Naphthalene	91-20-3	24	0.002	106
Nickel	7440-02-0	0.003	0.00001	0.1
Nitrogen oxide	10024-97-2	0.025	0.001	1
Nitrogen oxides (NOX) <sup>1</sup>	426033	35156	220	904200
o-Xylene	95-47-6	0.43	0.01	4
p-Xylene	106-42-3	2.23	1	4
Particulate matter (PM) <sup>1</sup>	111013	870	14	17000
Perylene	198-55-0	0.00024	0.0000001	0.0003
Phenanthrene	85-01-8	1.96	0.00004	7
Phenol	108-95-2	2.02	1	3
Phosphorus	7723-14-0	12.7	3	23
PM10	111013	840	10.3	16889
PM2.5	111013	820	13.9	16852
Polycyclic aromatic hydrocarbons, with components reported (PAHs-w/) <sup>1</sup>	115013	61	4.83	117
Polycyclic aromatic hydrocarbons, without components reported (PAHs-w/o) <sup>1</sup>	11513	0.06	0.0003	28
Propylene	115-07-1	245	7	9608
Propylene oxide	75-56-9	45	28	45
Pyrene	129-00-0	0.2	0.00001	1
Reactive organic gases (ROG) <sup>1</sup>	ROGC3	16310	20	363921
Selenium	7782-49-2	0.001	0.00002	0.05
Silica, crystalline	11753	18.3	18	18
Sodium hydroxide	1310-73-2	4.4	0.04	4
Styrene	100-42-5	1.54	0.002	13
Sulfur oxides (SOX) <sup>1</sup>	42-40-1	152	0.298	20000
Tetrachloroethane	79-34-5	3.6	0.005	22
Perchloroethylene	127-18-4	51	24	277

1 Chemical groupings, removed during analysis and discussion in Section 1.4.6;

2 Chemical grouping, but retained due to available toxicity information;

3 Pollutant ID reported rather than CASRN as assigned in the Air Toxics Hot Spots Program.

Chemical Name <sup>1,2</sup>	CASRN <sup>3</sup>	Emissions (pounds/year)		
		Median	Min	Max
Toluene	108-88-3	198	0.002	2246
Total organic gases (TOG) <sup>1</sup>	431013	101080	29	2954880
Total Suspended Particulates (TSP) <sup>1</sup>	TSP3	11972	11972	11972
Trichloroethylene	79-01-6	44	0.05	102
Vinyl chloride	75-01-4	1.58	0.00001	11
VOCs	VOC3	59146	31168	314682
Xylenes <sup>2</sup>	1330-20-7	72	0.02	893
Zinc	7440-66-6	0.26	0.001	0.47

- 1 Chemical groupings, removed during analysis and discussion in Section 1.4.6;
- 2 Chemical grouping, but retained due to available toxicity information;
- 3 Pollutant ID reported rather than CASRN as assigned in the Air Toxics Hot Spots Program.

### 1.C.2 Tables for Section 1.4.6, Toxicity of Chemical Components with Public Health Relevance

Toxicity-weighted emissions scores were calculated using all available median annual emissions data (pounds/year) from emissions inventories maintained by California Air Resources Board (CARB) and South Coast Air Quality Management District (SCAQMD) and Inhalation Toxicity Scores for individual chemicals from U.S. EPA's Risk-Screening Environmental Indicators (RSEI) Model (U.S. EPA, 2017). Chemical-specific median annual emissions were multiplied by toxicity weights to calculate toxicity-weighted emissions.

U.S. EPA's Inhalation Toxicity Scores are chemical-specific toxicity weights for chronic non-cancer and cancer endpoints. For chemicals with toxicity weights for both non-cancer and cancer endpoints, the highest (most protective) value was chosen as the Inhalation Toxicity Score (U.S. EPA, 2017).

We also provide calculations that evaluate non-cancer and cancer hazards independently. In brief, non-cancer toxicity weights are derived using U.S. EPA Inhalation reference concentrations (RfC); cancer toxicity weights are derived using U.S. EPA Inhalation Unit Risk (IUR) for individual chemicals. For more information about U.S. EPA's RSEI toxicity weights, see <https://www.epa.gov/rsei/rsei-toxicity-data-and-calculations>.

Total (non-cancer and cancer), non-cancer, and cancer toxicity-weighted emissions and rankings for pollutants associated with UGS in California are shown in Table 1.C-2.

Table 1.C-2. Total (non-cancer and cancer), non-cancer, and cancer toxicity-weighted emissions for pollutants associated with UGS in California. Pollutants are reported in alphabetical order.

Chemical Name <sup>1</sup>	CASRN	Median annual emissions (pounds/year)	Inhalation Toxicity Score		Non-cancer		Cancer	
			Overall Toxicity Weights	Toxicity-weighted emissions	Non-cancer Toxicity Weights	Toxicity-weighted emissions	Cancer Toxicity Weights	Toxicity-weighted emissions
2-Methyl naphthalene <sup>1</sup>	91-57-6	6	710,000	4,433,950			710,000	4,260,000
Acenaphthene <sup>1</sup>	83-32-9	0.2	710,000	127,729			710,000	127,800
Acenaphthylene <sup>1</sup>	208-96-8	0.9	710,000	623,337			710,000	639,000
Acetaldehyde	75-07-0	392	7,900	3,093,610	390	152,880	7,900	3,096,800
Acrolein	107-02-8	206	180,000	37,066,065	180,000	37,080,000		
Ammonia	7664-41-7	996	35	34,874	35	34,860		
Anthracene	120-12-7	0.03	3.3	0.1				
Arsenic	7440-38-2	0.001	15,000,000	17,865	230,000	276	15,000,000	18,000
Asbestos	1332-21-4	0.002	165,000,000	324,225			170,000,000	340,000
Benzene	71-43-2	171	28,000	4,791,412	120	20,520	28,000	4,788,000
Benzo(a)pyrene <sup>1</sup>	50-32-8	0.0003	710,000	198			710,000	213
Benzo(g,h,i)perylene	191-24-2	0.06	20,000	1,116			20,000	1,116
Benzo[a]anthracene <sup>1</sup>	56-55-3	0.06	710,000	39,612			710,000	12,780
Benzo[b]fluoranthene <sup>1</sup>	205-99-2	0.02	710,000	16,962			710,000	17,040
Benzo[e]pyrene <sup>1</sup>	192-97-2	0.06	710,000	39,663			710,000	39,689
Benzo[k]fluoranthene <sup>1</sup>	207-08-9	0.0002	710,000	148			710,000	149.1
Beryllium	7440-41-7	0.0001	8,600,000	784	180,000	16.2	8,600,000	774
Biphenyl	92-52-4	18	800	14,271				
1,3-Butadiene	106-99-0	57	110,000	6,236,313	1,800	102,600	110,000	6,270,000
Cadmium	7440-43-9	0.001	6,400,000	6,912	350,000	385	6,400,000	7,040
Carbon tetrachloride	56-23-5	3	21,000	69,689	35	115.5	21,000	69,300
Chlorine	7782-50-5	0.08	23,000	1,867	23,000	1,863		
Chlorobenzene	108-90-7	1	3.5	4	3.5	4.2		
Chlorodifluoromethane	75-45-6	10	0.07	1	0.07	0.7		
Chloroform	67-66-3	2	82,000	157,053	36	69.12	82,000	157,440
Chromium (VI) <sup>2</sup>	7440-47-3	0.008	43,000,000	325,080	35,000	280	43,000,000	344,000
Chrysene <sup>1</sup>	218-01-9	0.09	710,000	63,190			710,000	63,190
Copper	7440-50-8	0.002	1,500	3.4	1,500	3.3		
Ethylene dibromide	106-93-4	4	2,100,000	8,428,974	390	1,560	2,100,000	8,400,000
Ethylene dichloride	107-06-2	3	93,000	251,633	1.5	4.05	93,000	251,100
Methylene chloride	75-09-2	10	36	361	5.8	58.23	36	361.44
1,2-Dichloropropane	78-87-5	2	880	2,145	880	2,112		
1,3-Dichloropropene	542-75-6	2.6	14,000	36,384	180	468	14,000	36,400

1 Polycyclic aromatic hydrocarbon (PAH) toxicity weight applied as specific PAH did not have toxicity weight provided.

2 Chromium (hexavalent) toxicity weight applied to Chromium (VI) emissions. No separate toxicity weight provided for nonhexavalent chromium.

Chemical Name <sup>1</sup>	CASRN	Median annual emissions (pounds/year)	Inhalation Toxicity Score		Non-cancer		Cancer	
			Overall Toxicity Weights	Toxicity-weighted emissions	Non-cancer Toxicity Weights	Toxicity-weighted emissions	Cancer Toxicity Weights	Toxicity-weighted emissions
Ethylbenzene	100-41-4	25	890	22,193	3.5	87.5	890	22,250
Ethylene glycol	107-21-1	27	8.8	234	8.8	237.6		
1,1-Dichloroethane	75-34-3	0.6	570	328	7	4.2	570	342
Fluoranthene <sup>1</sup>	206-44-0	0.2	710,000	113,423			710,000	113,600
Fluorene <sup>1</sup>	86-73-7	0.8	710,000	579,379			710,000	568,000
Formaldehyde	50-00-0	3159	46,000	145,310,537	360	1,137,240	46,000	145,314,000
Hexane	110-54-3	250	5	1,252	5	1,250		
Hydrochloric acid	7647-01-0	0.09	180	17	180	16.92		
Hydrogen sulfide	2148878	0.01	1,800	23	1,800	23.4		
Indeno[1,2,3-cd]pyrene <sup>1</sup>	193-39-5	0.0004	710,000	288			710,000	284
Lead	7439-92-1	0.01	23,000	207	23,000	207		
Manganese	7439-96-5	0.002	12,000	23	12,000	22.8		
Mercury	7439-97-6	0.001	12,000	10	12,000	9.6		
Methanol	67-56-1	213	0.18	38	0.18	38.34		
Methyl ethyl ketone	78-93-3	0.02	0.7	0.01	0.7	0.01		
Methyl tert-butyl ether	1634-04-4	0.4	93	35	1.2	0.46	93	35.34
Naphthalene	91-20-3	24	12,000	285,914	1,200	28,800	12,000	288,000
Nickel	7440-02-0	0.003	930,000	3,116	39,000	117	930,000	2,790
Perylene <sup>1</sup>	198-55-0	0.0002	710,000	171			710,000	170.4
Phenanthrene <sup>1</sup>	85-01-8	2	710,000	1,388,760			710,000	710,000
Phenol	108-95-2	2	18	36	18	36.36		
Phosphorus	7723-14-0	13	50,000	636,875	50,000	635,000		
Propylene	115-07-1	245	1.2	294	1.2	294		
Propylene oxide	75-56-9	45	13,000	579,800	120	5,400	13,000	585,000
Pyrene <sup>1</sup>	129-00-0	0.2	710,000	138,969			710,000	142,000
Selenium	7782-49-2	0.001	180	0.2	180	0.18		
Styrene	100-42-5	2	3.5	5	3.5	5.39		
Tetrachloroethane	79-34-5	4	210,000	760,790			210,000	756,000
Perchloroethylene	127-18-4	51	930	47,695	88	4,488	930	47,430
Toluene	108-88-3	198	0.7	139	0.7	138.6		
1,1,1-Trichloroethane	71-55-6	1	0.7	1	0.7	0.77		
1,1,2-Trichloroethane	79-00-5	3	5,700	16,426	8.8	25.52	5,700	16,530
Trichloroethylene	79-01-6	44	15,000	657,075	1,800	79,200	15,000	660,000
1,2,4-Trimethylbenzene	95-63-6	69	580	39,750	580	40,020		
Vinyl chloride	75-01-4	2	31,000	48,999	35	55.3	31,000	48,980

1 Polycyclic aromatic hydrocarbon (PAH) toxicity weight applied as specific PAH did not have toxicity weight provided.

2 Chromium (hexavalent) toxicity weight applied to Chromium (VI) emissions. No separate toxicity weight provided for nonhexavalent chromium.

Chemical Name <sup>1</sup>	CASRN	Median annual emissions (pounds/year)	Inhalation Toxicity Score		Non-cancer		Cancer	
			Overall Toxicity Weights	Toxicity-weighted emissions	Non-cancer Toxicity Weights	Toxicity-weighted emissions	Cancer Toxicity Weights	Toxicity-weighted emissions
Xylenes	1330-20-7	72	35	2,522	35	2,520		
Xylene, m-	108-38-3	190	35	6,635	35	6,650		
Xylene, o-	95-47-6	0.4	35	15	35	15.05		
Xylene, p-	106-42-3	2	35	78	35	78.05		
Zinc	7440-66-6	0.3	100	26	100	26		

1 Polycyclic aromatic hydrocarbon (PAH) toxicity weight applied as specific PAH did not have toxicity weight provided.

2 Chromium (hexavalent) toxicity weight applied to Chromium (VI) emissions. No separate toxicity weight provided for nonhexavalent chromium.

*Table 1.C-3. Hazard Screening Matrix for Acute Human Health Effects of Chemicals Emitted from UGS Facilities in California (Non-cancer). Chemicals are organized by alphabetical order.*

Chemical	CASRN	Acute REL (ug/m <sup>3</sup> )	Acute MRL (ug/m <sup>3</sup> )	Acute Screening Criteria (ug/m <sup>3</sup> )
1,1,1-Trichloroethane	71-55-6	6.80E+04		6.80E+04
1,3-Butadiene	106-99-0	6.60E+02		6.60E+02
Acetaldehyde	75-07-0	4.70E+02		4.70E+02
Acrolein	107-02-8	2.50E+00	6.88E+00	2.50E+00
Ammonia	7664-41-7	3.20E+03	1.18E+03	1.18E+03
Arsenic	7440-38-2	2.00E-01		2.00E-01
Benzene	71-43-2	2.70E+01	2.88E+01	2.70E+01
Carbon monoxide	630-08-0	2.30E+04		2.30E+04
Carbon tetrachloride	56-23-5	1.90E+03		1.90E+03
Chlorine	7782-50-5	2.10E+02		2.10E+02
Chloroform	67-66-3	1.50E+02		1.50E+02
Copper	7440-50-8	1.00E+02		1.00E+02
Ethylene glycol	107-21-1		2.00E+03	2.00E+03
Ethylene glycol monobutyl ether	111-76-2	1.40E+04	4.46E+03	4.46E+03
Formaldehyde	50-00-0	5.50E+01	4.91E+01	4.91E+01
Hydrochloric acid	7647-01-0	2.10E+03		2.10E+03
Hydrogen sulfide	2148878	4.20E+01	9.76E+01	4.20E+01
m-Xylene	108-38-3	2.20E+04		2.20E+04
Methyl tert-butyl ether	1634-04-4		7.21E+03	7.21E+03
Mercury	7439-97-6	6.00E-01		6.00E-01
Methanol	67-56-1	2.80E+04		2.80E+04
Methyl ethyl ketone	78-93-3	1.30E+04		1.30E+04
Methylene chloride	75-09-2	1.40E+04	2.08E+03	2.08E+03
Nickel	7440-02-0	2.00E-01		2.00E-01
o-Xylene	95-47-6	2.20E+04		2.20E+04

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<b>Chemical</b>	<b>CASRN</b>	<b>Acute REL (ug/m3)</b>	<b>Acute MRL (ug/m3)</b>	<b>Acute Screening Criteria (ug/m3)</b>
p-Xylene	106-42-3	2.20E+04		2.20E+04
Perchloroethylene	127-18-4	2.00E+04	4.07E+01	4.07E+01
Phenol	108-95-2	5.80E+03		5.80E+03
Propylene oxide	75-56-9	3.10E+03		3.10E+03
Sodium Hydroxide	1310-73-2	8.00E+00		8.00E+00
Styrene	100-42-5	2.10E+04	2.13E+04	2.10E+04
Toluene	108-88-3	3.70E+04	7.54E+03	7.54E+03
Vinyl chloride	75-01-4	1.80E+05		1.80E+05
Xylenes	1330-20-7	2.20E+04	8.68E+03	8.68E+03

## References

U.S. EPA (Environmental Protection Agency), 2017. Risk-Screening Environmental Indicators (RSEI) Model - RSEI Toxicity-Data and Calculations. <https://www.epa.gov/rsei/rsei-toxicity-data-and-calculations>.



### 1.C.3 Supplementary Tables for Section 1.4.5.1., Characterization of UGS Facility Emissions

**California UGS Facility-Specific Emissions reported between 1987 and 2015.** Tables 1.C-4 through 1.C-16 report facility-specific annual emissions of pollutants for the 13 UGS facilities in California. Emissions are reported to at least one significant digit.

*Table 1.C-4. Annual emissions of pollutants from the Aliso Canyon UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID<sup>1</sup></b>	<b>CASRN<sup>2</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1,2- Trichloroethane	79-00-5	9	5	12	9
1,2-Dichloropropane	78-87-5	7	4	7	7
1,2,4-Trimethylbenzene	95-63-6	193	193	199	195
1,3-Butadiene <sup>1</sup>	106-99-0	121	100	161	129
1,3-Dichloropropene	542-75-6	7	6	7	7
2-Methylnaphthalene	91-57-6	9	6	12	9
Acenaphthene	83-32-9	0.3	0.1	0.5	0.3
Acenaphthylene	208-96-8	1	1	2	1
Acetaldehyde <sup>1</sup>	75-07-0	448	448	2254	1095
Acrolein	107-02-8	175	175	1443	633
Ammonia	7664-41-7	16960	4136	33907	17210
Arsenic	7440-38-2	0.003	0.001	0.006	0.003
Benzene <sup>1</sup>	71-43-2	666	341	1526	858
Benzo[b]fluoranthene	205-99-2	0.04	0.03	0.06	0.04
Benzo[e]pyrene	192-97-2	0.09	0.02	0.15	0.08
Benzo[g,h,i]perylene	191-24-2	0.09	0.02	0.15	0.08
Cadmium	7440-43-9	0.002	0.001	0.01	0.003
Carbon monoxide <sup>1</sup>	630-08-0	296476	182897	478600	307557
Carbon tetrachloride <sup>1</sup>	56-23-5	11	4	15	10
Chlorine	7782-50-5	0.4	0.2	0.4	0.4
Chloroform <sup>1</sup>	67-66-3	8	6	8	7
Chromium (VI)	18540-29-9	0.0001	0	0.0004	0.0001
Chrysene	218-01-9	0.2	0.05	0.3	0.2
Copper	7440-50-8	0.01	0.01	213	43
Diesel engine exhaust, particulate matter (PM)	9901 <sup>2</sup>	46	46	46	46
Ethylbenzene <sup>1</sup>	100-41-4	291	260	291	283
Ethylene dibromide	106-93-4	13	5	18	12
Ethylene dichloride	107-06-2	6	3	10	6

1 Compounds with unique chemical identifier (not a pollutant group) and monitored for during or after the Aliso Canyon SS-25 LOC event.

2 Pollutant ID is reported as CASRN was unavailable

## Chapter 1

<b>Pollutant ID<sup>1</sup></b>	<b>CASRN<sup>2</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Ethylene glycol monobutyl ether	111-76-2	1	1	20	6
Fluoranthrene	206-44-0	0.3	0.1	0.4	0.3
Fluorene	86-73-7	1	1	2	1
Formaldehyde <sup>1</sup>	50-00-0	15001	5688	20640	14722
Hexane <sup>1</sup>	110-54-3	471	471	501	479
Hydrochloric acid	7647-01-0	0.24	0.20	0.24	0.23
Lead	7439-92-1	0.013	0.008	0.031	0.015
m-Xylene <sup>1</sup>	108-38-3	801	2	801	601
Manganese	7439-96-5	0.007	0.005	7590	1518
Mercury	7439-97-6	0.0027	0.0027	0.0030	0.0028
Methanol	67-56-1	213	213	937	488
Methyl ethyl ketone <sup>1</sup>	78-93-3	12	4	640	167
Methyl tert-butyl ether	1634-04-4	2.0	0.9	2.0	1.7
Methylene chloride <sup>1</sup>	75-09-2	30	7	48	29
Naphthalene	91-20-3	30	21	81	44
Nickel	7440-02-0	0.01	0.01	0.02	0.01
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	371263	294758	817400	397828
o-Xylene <sup>1</sup>	95-47-6	2	1	2	1
PAHs, without components reported	1151 <sup>2</sup>	1	1	6	3
Particulate matter (PM)	11101 <sup>2</sup>	828	200	17000	4266
Perchloroethylene <sup>1</sup>	127-18-4	60	47	277	111
Phenanthrene	85-01-8	2	2	4	3
PM10	11101 <sup>2</sup>	789	190	16889	3931
PM2.5	11101 <sup>2</sup>	785	186	16852	3920
Propylene <sup>1</sup>	115-07-1	7590	7590	7590	7590
Propylene oxide <sup>1</sup>	75-56-9	45	45	45	45
Pyrene	129-00-0	0.3	0.1	1	0.3
Reactive organic gases (ROG)	ROGC2	69	21	182	91
Selenium	7782-49-2	0.003018	0.003000	0.003018	0.003014
Styrene <sup>1</sup>	100-42-5	7	4	7	6
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>2</sup>	3586	3	5559	2935
Toluene <sup>1</sup>	108-88-3	640	640	943	751
Total organic gases (TOG)	43101 <sup>1</sup>	727944	139873	2954880	1096665
Total Suspended Particulates (TSP)	TSP1	6	6	6	6
Trichloroethylene <sup>1</sup>	79-01-6	22	0.05	57	27
Vinyl chloride	75-01-4	4	2	6	4
Volatile organic compounds (VOC)	VOC <sup>1</sup>	157	157	157	157
Xylenes	1330-20-7	216	162	893	263

1 Compounds with unique chemical identifier (not a pollutant group) and monitored for during or after the Aliso Canyon SS-25 LOC event.

2 Pollutant ID is reported as CASRN was unavailable

*Table 1.C-5. Annual emissions of pollutants from the Princeton Gas UGS facility between 2012 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Ammonia	7664-41-7	0.06	0.06	0.44	0.155
Carbon monoxide	630-08-0	320	320	4500	1365
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	290	290	1592	615.5
Particulate matter (PM)	11101 <sup>1</sup>	50	50	68.6	54.65
PM10	11101 <sup>1</sup>	50	50	68	54.5
PM2.5	11101 <sup>1</sup>	46	44	62	50
Reactive organic gases (ROG)	ROGC <sup>1</sup>	104	104	1352	416
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	26	26	30	27
Total organic gases (TOG)	43101 <sup>1</sup>	118	118	1398	438

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable

*Table 1.C-6. Annual emissions of pollutants from the Gill Ranch UGS facility between 2012 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1-Dichloroethane	75-34-3	0.002	0.002	0.002	0.002
1,1,2Trichloroethane	79-00-5	0.004	0.003	0.005	0.004
1,2-Dichloropropane	78-87-5	0.0023	0.0023	0.0023	0.0023
1,3-Butadiene	106-99-0	0.12	0.12	0.12	0.12
Acetaldehyde	75-07-0	0.6	0.6	0.7	0.6
Acrolein	107-02-8	0.6	0.5	0.6	0.6
Benzene	71-43-2	0.5	0.5	0.7	0.6
Carbon monoxide	630-08-0	429.2	191.6	765.8	453.9
Carbon tetrachloride	56-23-5	0.003	0.003	0.003	0.003
Chlorobenzene	108-90-7	0.002	0.002	0.002	0.002
Chloroform	67-66-3	0.002	0.002	0.002	0.002
Diesel engine exhaust, particulate matter (PM)	9901 <sup>1</sup>	1.8	1.0	1.9	1.6
Ethylbenzene	100-41-4	0.3	0.3	0.5	0.3
Ethylene dibromide	106-93-4	0.004	0.004	0.004	0.004
Ethylene dichloride	107-06-2	0.002	0.002	0.002	0.002
Formaldehyde	50-00-0	4.1	4.1	4.7	4.3
Hexane	110-54-3	0.2	0.2	0.4	0.2
Methane	74-82-8	0.05	0.05	0.05	0.05
Methanol	67-56-1	0.5	0.5	0.5	0.5
Methylene chloride	75-09-2	0.0074	0.0074	0.0074	0.0074
Naphthalene	91-20-3	0.0263	0.0261	0.0350	0.0285

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Nitrogen oxide	10024-97-2	0.0060	0.0060	0.0060	0.0060
Nitrogen oxides (NO <sub>x</sub> )	42603	475.1	293.3	684.5	482.0
PAHs, without components reported	1151 <sup>1</sup>	0.037	0.037	0.049	0.040
Particulate matter (PM)	11101 <sup>1</sup>	284.5	226.5	458.5	313.5
PM10	11101 <sup>1</sup>	284.4	226.5	458.4	313.4
PM2.5	11101 <sup>1</sup>	284.4	226.4	458.4	313.4
Propylene	115-07-1	19.7	19.2	42.0	25.2
Reactive organic gases (ROG)	ROGC <sup>1</sup>	409.3	322.4	656.8	449.5
Styrene	100-42-5	0.002	0.002	0.002	0.002
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	103.3	83.1	168.3	114.5
Toluene	108-88-3	1.1	1.1	2.2	1.4
Total organic gases (TOG)	43101 <sup>1</sup>	1115.5	826.1	1675.5	1183.1
Vinyl chloride	75-01-4	0.001	0.001	0.001	0.001
Xylenes	1330-20-7	0.8	0.7	1.6	1.0

1 Pollutant ID is reported as CASRN was unavailable

*Table 1.C-7. Annual emissions of pollutants from the Goleta UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,3-Butadiene	106-99-0	67	0.2	113	56
Acetaldehyde	75-07-0	281	9	476	239
Acrolein	107-02-8	255	5	441	217
Ammonia	7664-41-7	20018	20018	20018	20018
Arsenic	7440-38-2	0.02	0.0003	0.03	0.02
Benzene	71-43-2	414	29	612	336
Cadmium	7440-43-9	0.02	0.00004	0.03	0.01
Carbon monoxide	630-08-0	120090	49600	279320	135084
Carbon tetrachloride	56-23-5	2	1	3	2
Chromium	7440-47-3	0.01	0.007	0.01	0.01
Chromium (VI)	18540-29-9	0.001	0.000003	0.002	0.001
Copper	7440-50-8	0.05	0.0001	0.1	0.04
Chlorobenzene	108-90-7	1	0.0002	2	1
Chloroform	67663	2	1	2	2
Ethylbenzene	100-41-4	5	2	15	6
Ethylene dibromide	106-93-4	2	2	4	3
Formaldehyde	50-00-0	2197	110	3456	1850
Gasoline vapors	1110 <sup>1</sup>	38	38	38	38
Hexane	110-54-3	3799	3427	7638	4214
Hydrochloric acid	7647-01-0	2	0.01	4	2

1 Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Hydrogen sulfide	7783-06-4	0.4	0.4	0.4	0.4
Lead	7439-92-1	0.10	0.0002	0.18	0.08
Manganese	7439-96-5	0.04	0.00008	0.07	0.03
Methanol	67-56-1	319	2	513	266
Mercury	7439-97-6	0.023	0.00005	0.04	0.020
Methylene chloride	75-09-2	5	3	7	5
Naphthalene	91-20-3	10	2	17	9
Nickel	7440-02-0	0.04	0.0001	0.1	0.04
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	11144	6600	176600	28335
PAHS, without components reported	1151 <sup>1</sup>	15	1	24	14
Particulate matter (PM)	11101 <sup>1</sup>	1629	660	3400	1741
PM10	11101 <sup>1</sup>	1622	656	3382	1731
PM2.5	11101 <sup>1</sup>	1619	655	3376	1729
Propylene	115-07-1	242	7	1123	251
Reactive organic gases (ROG)	ROGC1	88216	15125	292458	91400
Selenium	7782-49-2	0.03	0.00006	0.05	0.02
Styrene	100-42-5	1	1	2	1
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	172	0	20000	1401
Toluene	108-88-3	1104	11	2246	784
Total organic gases (TOG)	43101 <sup>1</sup>	240972	101080	469323	232550
Xylenes	1330-20-7	428	6	886	305
Zinc	7440-66-6	0.3	0.0006	0.5	0.2

1 Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-8. Annual emissions of pollutants from the Honor Rancho UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1,1-Trichloroethane	71-55-6	1	1	1	1
1,1,2-Trichloroethane	79-00-5	17	13	22	17
1,2-Dichloropropane	78-87-5	10	10	15	11
1,2,4-Trimethylbenzene	95-63-6	70	70	81	72
1,3-Butadiene	106-99-0	184	144	244	184
1,3-Dichloropropene	542-75-6	11	11	14	12
2-Methylnaphthalene	91-57-6	16	12	23	16
Acenaphthene	83-32-9	1	0.1	1	1
Acenaphthylene	208-96-8	3	1	4	2
Acetaldehyde	75-07-0	546	546	4499	2012

1 Pollutant ID is reported as CASRN was unavailable.

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<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Acrolein	107-02-8	216	216	2833	1204
Ammonia	7664-41-7	1863	1401	2476	1889
Arsenic	7440-38-2	0.00001	0	0.0004	0.0001
Benzene	71-43-2	498	396	1889	931
Benzo[b]fluoranthene	205-99-2	0.07	0.01	0.12	0.07
Benzo[e]pyrene	192-97-2	0.18	0.03	0.29	0.16
Benzo[g,h,i]perylene	191-24-2	0.18	0.03	0.29	0.16
Cadmium	7440-43-9	0.00001	0	0.00033	0.00005
Carbon monoxide	630-08-0	220236	21349	403000	221726
Carbon tetrachloride	56-23-5	19	14	27	19
Chlorinated fluorocarbons	1104 <sup>1</sup>	8	1	27	8
Chlorine	7782-50-5	0.01	0.01	0.05	0.02
Chloroform	67-66-3	12	12	16	13
Chromium (VI)	18540-29-9	0.000001	0	0.000014	0.000003
Chrysene	218-01-9	0.3	0.1	0.5	0.3
Copper	7440-50-8	0.0003	0.0002	0.0067	0.0014
Diethylene glycol mono-n-butyl ether	112-34-5	13	13	13	13
Diesel engine exhaust, particulate matter	9901 <sup>1</sup>	2	2	2	2
Ethylene glycol butyl ether	111-76-2	93	3	183	93
Ethylbenzene	100-41-4	97	97	114	100
Ethylene dibromide	106-93-4	23	17	33	23
Ethylene dichloride	107-06-2	12	9	17	12
Fluoranthene	206-44-0	1	0.1	1	0.5
Fluorene	86-73-7	3	1	4	3
Formaldehyde	50-00-0	18675	983	27296	16744
Glycol ethers	11151	0.4	0.04	1	0.4
Hexane	110-54-3	502	502	655	546
Hydrochloric acid	7647-01-0	0.009	0.002	0.009	0.007
Lead	7439-92-1	0.001	0	0.060	0.008
m-Xylene	108-38-3	0.19	0.19	314	53
Manganese	7439-96-5	0.00029	0.00020	0.00043	0.00030
Mercury	7439-97-6	0.00010	0.00002	0.00010	0.00007
Methanol	67-56-1	1177	1177	1515	1281
Methyl ethyl ketone	78-93-3	0.003	0.003	0.33	0.06
Methyl tert-butyl ether	1634-04-4	0.08	0.08	0.24	0.13
Methylene chloride	75-09-2	13	10	18	14
Naphthalene	91-20-3	47	34	92	59
Nickel	7440-02-0	0.0002	0	0.0034	0.0007
Nitrogen oxides (NO <sub>x</sub> )	42603	103638	69764	904200	149268

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
o-Xylene	95-47-6	0.06	0.06	4	1
p-Xylene	106-42-3	2	1	4	2
Polycyclic aromatic hydrocarbons (PAHs), without components reported	1151 <sup>1</sup>	0.003	0.001	10	3
Particulate matter (PM)	111011	672	59	7722	2169
Perchloroethylene	127-18-4	51	24	142	59
Phenanthrene	85-01-8	5	3	7	5
Phosphorus	7723-14-0	13	3	23	13
PM10	11101 <sup>1</sup>	653	40	7676	2148
PM2.5	111011	646	40	7661	2140
Propylene	115-07-1	9333	9333	9333	9333
Pyrene	129-00-0	1	0.1	1	1
Reactive organic gases (ROG)	ROGC <sup>1</sup>	99532	26067	225650	123576
Selenium	7782-49-2	0.00011	0.00002	0.00011	0.00008
Silica, Crystalline	1175 <sup>1</sup>	18	18	18	18
Sodium hydroxide	1310-73-2	4	0	4	4
Styrene	100-42-5	10	10	13	11
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	272	2	465	246
Toluene	108-88-3	637	395	637	535
Total organic gases (TOG)	43101 <sup>1</sup>	718466	94862	2237980	881998
Trichloroethylene	79-01-6	64	8	78	58
Vinyl chloride	75-01-4	8	5	11	7
Volatile organic compounds (VOCs)	VOC <sup>1</sup>	60445	59146	61744	60445
Xylenes	1330-20-7	234	110	384	279

1 Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-9. Annual emissions of pollutants from the Lodi Gas UGS facility between 2003 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1-Dichloroethane	75-34-3	0.6	0.6	0.6	0.6
1,1,2-Trichloroethane	79-00-5	0.9	0.8	1.0	0.9
1,2-Dichloropropane	78-87-5	0.7	0.7	0.7	0.7
1,2,4-Trimethylbenzene	95-63-6	0.3	0.3	0.3	0.3
1,3-Butadiene	106-99-0	6.5	6.5	6.5	6.5
2-Methylnaphthalene	91-57-6	0.8	0.8	6.1	2.1
2,2,4-Trimethylpentane	540-84-1	6.1	0.8	6.1	4.8

1 Pollutant ID is reported as CASRN was unavailable.

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<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Acenaphthene	83-32-9	0.03	0.03	0.03	0.03
Acenaphthylene	208-96-8	0.1	0.1	0.1	0.1
Acetaldehyde	75-07-0	204	1	204	117
Acrolein	107-02-8	125	3	125	73
Ammonia	7664-41-7	778	103	1200	674
Benzene	71-43-2	12	12	36	21
Benzo[b]fluoranthene	205-99-2	0.004	0.004	0.004	0.004
Benzo[e]pyrene	192-97-2	0.01	0.01	0.01	0.01
Benzo[g,h,i]perylene	191-24-2	0.01	0.01	0.01	0.01
Biphenyl	92-52-4	5.2	5.2	5.2	5.2
Carbon monoxide	630-08-0	21188	598	26664	17795
Carbon tetrachloride	56-23-5	0.9	0.9	0.9	0.9
Chlorobenzene	108-90-7	0.7	0.7	0.7	0.7
Chloroform	67-66-3	0.7	0.7	0.7	0.7
Chrysene	218-01-9	0.02	0.02	0.02	0.02
Ethylbenzene	100-41-4	6	6	122	53
Ethylene dibromide	106-93-4	1.1	1.1	1.1	1.1
Ethylene dichloride	107-06-2	0.6	0.6	0.6	0.6
Fluoranthene	206-44-0	0.03	0.03	0.03	0.03
Fluorene	86-73-7	0.1	0.1	0.1	0.1
Formaldehyde	50-00-0	1291	3	1291	740
Hexane	110-54-3	27	27	280	129
Hydrogen sulfide	6/4/83	0.010	0.006	0.014	0.010
Methane	74-82-8	0.2	0.2	0.3	0.2
Methanol	67-56-1	61.0	61.0	61.0	61.0
Methylene chloride	75-09-2	0.5	0.5	0.5	0.5
Naphthalene	91-20-3	1.9	1.9	55.6	23.5
Nickel	7440-02-0	0.02	0.02	0.02	0.02
Nitrogen oxide	10024-97-2	0.027	0.025	0.7	0.1
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	7459	263	11492	7357
Polycyclic aromatic hydrocarbons (PAHs), with components reported	1150 <sup>1</sup>	5.4	4.8	5.6	5.3
PAHs, without components reported	1151 <sup>1</sup>	0.4	0.0	0.7	0.4
Particulate matter (PM)	11101 <sup>1</sup>	8120	20	10167	7224
Phenanthrene	85-01-8	0.3	0.3	0.3	0.3
Phenol	108-95-2	0.6	0.6	0.6	0.6
PM10	11101 <sup>1</sup>	8072	10	10047	7145
PM2.5	11101 <sup>1</sup>	8055	20	10019	7127
Propylene	115-07-1	8	8	57	27
Pyrene	129-00-0	0.03	0.03	0.03	0.03

1 Pollutant ID is reported as CASRN was unavailable.



<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Reactive organic gases (ROG)	ROGC <sup>1</sup>	3202	152	3962	2722
Styrene	100-42-5	0.6	0.6	0.6	0.6
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	534	3	698	494
Toluene	108-88-3	11	7	11	9
Total organic gases (TOG)	43101 <sup>1</sup>	33006	340	42806	27407
Vinyl chloride	75-01-4	0.4	0.4	0.4	0.4
Xylenes	1330-20-7	5	5	13	8

1 Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-10. Annual emissions of pollutants from the Kirby Hills UGS facility between 2008 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Arsenic	7440-38-2	0	0	0.0002	0.0001
Benzene	71-43-2	12	9	23	13
Beryllium	7440-41-7	0	0	0.00010	0.00003
Cadmium	7440-43-9	0	0	0.00041	0.00013
Carbon monoxide	630-08-0	14054	7629	19622	14177
Chromium (VI)	18540-29-9	0	0	0.00001	0.000003
Formaldehyde	50-00-0	108	76	205	115
Lead	7439-92-1	0	0	0.0003	0.0001
Manganese	7439-96-5	0.001	0	0.001	0.001
Mercury	7439-97-6	0	0	0.0001	0.00004
Methane	74-82-8	54	47	56	52
Nickel	7440-02-0	0.006	0.004	0.007	0.006
Nitrogen oxide	10024-97-2	0.002	0.001	0.003	0.002
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	2264	664	3871	2323
Particulate matter (PM)	11101 <sup>1</sup>	4257	1436	6050	3988
PM10	11101 <sup>1</sup>	4257	1427	6014	3972
PM2.5	11101 <sup>1</sup>	4257	1425	6002	3966
Reactive organic gases (ROG)	ROGC <sup>1</sup>	10138	3299	14918	9960
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	103	60	136	97
Toluene	108-88-3	0.04	0.002	0.07	0.04
Total organic gases (TOG)	43101 <sup>1</sup>	114865	56626	162686	112538

1 Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-11. Annual emissions of pollutants from the Los Medanos UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Benzene	71-43-2	7	1	9	6
Carbon monoxide	630-08-0	55681	896	83000	52847
Ethylbenzene	100-41-4	0.01	0.01	0.01	0.01
Ethylene glycol	107-21-1	27	11	40	26
Formaldehyde	50-00-0	4968	394	7204	4597
Methane	74-82-8	58	54	73	62
Nitrogen oxide	10024-97-2	0.0264	0.0260	0.0280	0.0268
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	66620	1280	321200	72131
Particulate matter (PM)	11101 <sup>1</sup>	790	16	1200	662
PM10	11101 <sup>1</sup>	787	16	1193	659
PM2.5	11101 <sup>1</sup>	785	16	1190	657
Reactive organic gases (ROG)	ROGC <sup>1</sup>	4150	1869	21869	7386
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	59	0	960	125
Toluene	108-88-3	0.2	0.1	1	0.3
Total organic gases (TOG)	43101 <sup>1</sup>	16472	3574	663683	69128
Xylenes	1330-20-7	0.02	0.02	0.02	0.02

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-12. Annual emissions of pollutants from the McDonald Island UGS facility between 1993 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1-Dichloroethane	75-34-3	5.4	5.4	5.4	5.4
1,1,2-Trichloroethane	79-34-5	8.7	7.2	10.2	8.7
1,2-Dichloropropane	78-87-5	6.1	6.1	6.1	6.1
1,2,4-Trimethylbenzene	95-63-6	2.1	2.1	2.1	2.1
1,3-Butadiene	106-99-0	154	154	154	154
2-Methylnaphthalene	91-57-6	4.8	4.8	4.8	4.8
2,2,4-Trimethylpentane	540-84-1	36	36	36	36
Acenaphthene	83-32-9	0.2	0.2	0.2	0.2
Acenaphthylene	208-96-8	0.8	0.8	0.8	0.8
Acetaldehyde	75-07-0	1688	1	1688	965
Acrolein	107-02-8	1197	3	1197	685
Benzene	71-43-2	31.6	0.04	338.2	132.0
Benzo[b]fluoranthene	205-99-2	0.02	0.02	0.02	0.02
Benzo[e]pyrene	192-97-2	0.1	0.1	0.1	0.1

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Benzo[g,h,i]perylene	191-24-2	0.1	0.1	0.1	0.1
Biphenyl	92-52-4	30.5	30.5	30.5	30.5
Carbon monoxide	630-08-0	83221	3742	208863	89185
Carbon tetrachloride	56-23-5	8.4	8.4	8.4	8.4
Chlorobenzene	108-90-7	6.6	6.6	6.6	6.6
Chloroform	67-66-3	6.5	6.5	6.5	6.5
Chrysene	218-01-9	0.1	0.1	0.1	0.1
Diesel engine exhaust, particulate matter (PM)	9901 <sup>1</sup>	12	0	1464	218
Ethylbenzene	100-41-4	10	10	125	56
Ethylene dibromide	106-93-4	10	10	10	10
Ethylene dichloride	107-06-2	5.4	5.4	5.4	5.4
Fluoranthene	206-44-0	0.2	0.2	0.2	0.2
Fluorene	86-73-7	0.8	0.8	0.8	0.8
Formaldehyde	50-00-0	11163	2	11163	6380
Hexane	110-54-3	160	160	288	206
Methane	74-82-8	0.02	0.02	0.02	0.02
Methanol	67-56-1	936	892	1107	967
Methylene chloride	75-09-2	10	10	10	10
Naphthalene	91-20-3	27.6	27.6	57.2	38.6
Nitrogen oxide	10024-97-2	0.004	0.004	0.004	0.004
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	40310	3578	92620	41609
Polycyclic aromatic hydrocarbons (PAHs), with components reported	1150 <sup>1</sup>	5.1	5.1	5.7	5.3
PAHs, without components reported	1151 <sup>1</sup>	28.4	0.01	28.4	22.7
Particulate matter (PM)	11101 <sup>1</sup>	1993	104	3844	1743
Phenanthrene	85-01-8	1.5	1.5	1.5	1.5
Phenol	108-95-2	3.5	3.5	3.5	3.5
PM10	11101 <sup>1</sup>	1982	104	3678	1686
PM2.5	11101 <sup>1</sup>	1978	104	3820	1730
Propylene	115-07-1	16	16	72	32
Pyrene	129-00-0	0.2	0.2	0.2	0.2
Reactive organic gases (ROG)	ROGC <sup>1</sup>	4173	46	19479	8733
Styrene	100-42-5	5.5	5.5	5.5	5.5
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	544	0	16085	1213
Toluene	108-88-3	7	1	157	60
Total organic gases (TOG)	43101 <sup>1</sup>	40204	107	194536	90965
Vinyl chloride	75-01-4	3.4	3.4	3.4	3.4
Xylenes	1330-20-7	12	0.4	61	26

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-13. Annual emissions of pollutants from the Montebello UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1,2-Trichloroethane	79-34-5	0.2	0	0.7	0.3
1,2-Dichloropropane	78-87-5	0.2	0	0.4	0.2
1,2,4-Trimethylbenzene	95-63-6	27.2	19.8	34.6	27.2
1,3-Butadiene	106-99-0	0.1	0.004	19.8	3.0
1,3-Dichloropropene	542-75-6	0.2	0	0.4	0.2
2-Methylnaphthalene	91-57-6	0.0003	0.0003	0.0005	0.0004
Acenaphthene	83-32-9	0.00002	0.00002	0.00004	0.00002
Acenaphthylene	208-96-8	0.00004	0.00004	0.0002	0.0001
Acetaldehyde	75-07-0	321	0.05	559	300
Acrolein	107-02-8	151	0.02	224	131
Ammonia	7664-41-7	67	12	183	74
Anthracene	120-12-7	0.00001	0.00001	0.00015	0.00006
Asbestos	1332-21-4	0.0003	0.00003	0.006	0.002
Benzene	71-43-2	66.2	0.1	1969.8	531.5
Benzo[a]anthracene	56-55-3	0.000005	0.000005	0.00004	0.00002
Benzo[a]pyrene	50-32-8	0.0000001	0.0000001	0.00001	0.000003
Benzo[b]fluoranthene	205-99-2	0.0000001	0.0000001	0.00001	0.000004
Benzo[e]pyrene	192-97-2	0.0000003	0.0000003	0.00002	0.00001
Benzo[g,h,i]perylene	191-24-2	0.0000004	0.0000004	0.00001	0.000003
Benzo[k]fluoranthene	207-08-9	0.0000001	0.0000001	0.00001	0.000004
Carbon monoxide	630-08-0	1741	193	838656	177302
Carbon tetrachloride	56-23-5	0.0001	0	0.5	0.1
Chlorine	7782-50-5	0.07	0.01	0.14	0.07
Chloroform	67-66-3	0.2	0	0.4	0.2
Chrysene	218-01-9	0.00001	0.00001	0.00004	0.00002
Copper	7440-50-8	0.0005	0	0.001	0.0005
Ethylbenzene	100-41-4	33	25	41	33
Ethylene dibromide	106-93-4	0.00008	0	0.6	0.1
Ethylene dichloride	107-06-2	0.00004	0	0.3	0.1
Fluoranthene	206-44-0	0.00001	0.00001	0.0	0.0
Fluorene	86-73-7	0.00002	0.00002	0.0	0.0
Formaldehyde	50-00-0	0.9	0.2	19242	4875
Hexane	110-54-3	36	26	46	36
Indeno[1,2,3-cd]pyrene	193-39-5	0.0000001	0.0000001	0.0000057	0.000002
m-Xylene	108-38-3	120	83	156	120
Manganese	7439-96-5	0.0	0	0.0	0.0
Methanol	67-56-1	45	0.04	90	45

1 Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Methyl ethyl ketone	78-93-3	0.011	0.003	0.02	0.011
Methyl tert-butyl ether	1634-04-4	0.3	0.1	0.6	0.3
Methylene chloride	75-09-2	0.0001	0	41	3
Naphthalene	91-20-3	0.1	0.002	106	32
Nickel	7440-02-0	0.00007	0	0.001	0.0002
Nitrogen oxides (NO <sub>x</sub> )	42603	1253	220	428400	60413
o-Xylene	95-47-6	0.3	0.1	0.5	0.3
Polycyclic aromatic hydrocarbons (PAHs), with components reported	1150 <sup>1</sup>	117	117	117	117
PAHs, without components reported	1151 <sup>1</sup>	0.0004	0	0.006	0.001
Particulate matter (PM)	11101 <sup>1</sup>	42	0	1364	372
Perylene	198-55-0	0.0000001	0.0000001	0.000003	0.000001
Phenanthrene	85-01-8	0.00004	0.00004	0.0007	0.0003
PM10	11101 <sup>1</sup>	42	0	1356	368
PM2.5	11101 <sup>1</sup>	42	0	1353	368
Propylene	115-07-1	9608	9608	9608	9608
Pyrene	129-00-0	0.00001	0.00001	0.0001	0.0001
Reactive organic gases (ROG)	ROGC1	14934	320	206671	36315
Styrene	100-42-5	0.2	0.006	0.4	0.2
Sulfur oxides (SO <sub>x</sub> )	424011	3.1	0	6000	505
Toluene	108-88-3	386	78	660	378
Total organic gases (TOG)	431011	27105	400	1241000	194128
Vinyl chloride	75-01-4	0.00003	0	0.2	0.0
Xylenes	1330-20-7	123	0.04	240	121

1 Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-14. Annual emissions of pollutants from the Playa del Rey UGS facility between 1987 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
1,1-Dichloroethane	75-34-3	85	85	85	85
1,1,2-Trichloroethane	79-00-5	3	1	4	3
1,2-Dichloropropane	78-87-5	2	1	3	2
1,2,4-Trimethylbenzene	95-63-6	69	66	325	178
1,3-Butadiene	106-99-0	45	24	53	43
1,3-Dichloropropene	542-75-6	2	0.4	3	2
2-Methylnaphthalene	91-57-6	1.14	0.01	1.4	1.01
Acenaphthene	83-32-9	0.07	0.02	0.4	0.1
Acenaphthylene	208-96-8	0.17	0.05	0.20	0.15
Acetaldehyde	75-07-0	383	168	497	308

1 Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Acrolein	107-02-8	67	5	498	184
Ammonia	7664-41-7	925	182	5110	1405
Anthracene	120-12-7	0.04	0.009	0.05	0.03
Arsenic	7440-38-2	0.001	0.00002	0.005	0.001
Asbestos	1332-21-4	0.0001	0	0.009	0.002
Benzene	71-43-2	172	113	682	319
Benzo[a]anthracene	56-55-3	0.018	0.009	0.02	0.018
Benzo[a]pyrene	50-32-8	0.0003	0	0.0004	0.0002
Benzo[b]fluoranthene	205-99-2	0.0004	0	0.001	0.0003
Benzo[e]pyrene	192-97-2	0.0012	0	0.0015	0.00096
Benzo[g,h,i]perylene	191-24-2	0.001	0	0.002	0.001
Benzo[k]fluoranthene	207-08-9	0.0002	0	0.0003	0.0002
Cadmium	7440-43-9	0.001	0.00002	0.005	0.001
Carbon monoxide	630-08-0	4328	1348	152200	19507
Carbon tetrachloride	56-23-5	3	1	4	3
Chlorine	7782-50-5	0.12	0.01	0.4	0.104
Chloroform	67-66-3	2	1	3	2
Chromium (VI)	18540-29-9	0.00002	0	0.0003	0.00007
Chrysene	218-01-9	0.04	0.009	0.04	0.03
Chlorodifluoromethane	75-45-6	10	10	10	10
Copper	7440-50-8	0.002	0.001	0.003	0.002
Diesel engine exhaust, particulate matter (PM)	9901 <sup>1</sup>	11	11	11	11
Dipropylene glycol mono ethyl	34590-94-8	2	2	2	2
Ethylbenzene	100-41-4	80	72	129	84
Ethylene dibromide	106-93-4	4	1	5	3
Ethylene dichloride	107-06-2	2	1	3	2
Fluoranthene	206-44-0	0.020	0.011	0.023	0.019
Fluorene	86-73-7	0.09	0.01	0.11	0.07
Formaldehyde	50-00-0	3038	80	5772	3180
Glycol ethers	11151	2	2	2	2
Hexane	110-54-3	104	99	380	138
Hydrochloric acid	7647-01-0	0.06	0.004	0.09	0.06
Indeno[1,2,3-cd]pyrene	193-39-5	0.0004	0	0.001	0.0004
Lead	7439-92-1	0.004	0.0001	0.03	0.01
m-Xylene	108-38-3	247	223	265	250
Manganese	7439-96-5	0.002	0.001	0.003	0.002
Mercury	7439-97-6	0.0007	0.00004	0.001	0.001
Methanol	67-56-1	130	123	160	132
Methyl ethyl ketone	78-93-3	0.02	0.001	0.05	0.02

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Methyl tert-butyl ether	1634-04-4	1	0.02	2	0.5
Methylene chloride	75-09-2	17	5	46	19
Naphthalene	91-20-3	5	3	6	5
Nickel	7440-02-0	0.002	0.0001	0.01	0.004
Nitrogen oxides (NO <sub>x</sub> )	42603	52321	25714	874600	104402
o-Xylene	95-47-6	0.4	0.01	1	0.4
Polycyclic aromatic hydrocarbons (PAHs), without components reported	1151 <sup>1</sup>	0.01	0.001	0.1	0.02
Particulate matter (PM)	11101 <sup>1</sup>	1260	0	9400	1414
Perylene	198-55-0	0.0002	0	0.0003	0.0002
Phenanthrene	85-01-8	0.18	0.03	0.23	0.15
PM10	11101 <sup>1</sup>	1253	0	5734	1254
PM2.5	11101 <sup>1</sup>	1250	0	5217	1230
Propylene	115-07-1	2884	2884	2884	2884
Pyrene	129-00-0	0.03	0.02	0.04	0.03
Reactive organic gases (ROG)	ROGC <sup>1</sup>	38034	15529	177918	47682
Selenium	7782-49-2	0.0007	0.00005	0.001	0.0007
Styrene	100-42-5	3	1	4	2
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	28	0	400	50
Toluene	108-88-3	214	198	741	252
Total organic gases (TOG)	43101 <sup>1</sup>	113054	45106	747800	188502
Trichloroethylene	79-01-6	58	8	102	55
Vinyl chloride	75-01-4	1	0.4	2	1
Volatile organic compounds (VOC)	VOC <sup>1</sup>	32645	31168	34122	32645
Xylenes	1330-20-7	17	9	72	38

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-15. Annual emissions of pollutants from the Pleasant Creek UGS facility between 1998 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Carbon monoxide	630-08-0	6240	4900	22980	7696
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	1920	780	33080	6108
Particulate matter (PM)	11101 <sup>1</sup>	60	40	161	86
PM10	11101 <sup>1</sup>	60	40	160	86
PM2.5	11101 <sup>1</sup>	60	34	160	83
Reactive organic gases (ROG)	ROGC <sup>1</sup>	800	20	1700	860
Sulfur oxides (SO <sub>x</sub> )	42401 <sup>1</sup>	80	60	200	112
Total organic gases (TOG)	43101 <sup>1</sup>	5159	29	13499	7415

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.

*Table 1.C-16. Annual emissions of pollutants from the Wild Goose UGS facility between 2005 and 2015 reported in pounds/year.*

<b>Pollutant ID</b>	<b>CASRN<sup>1</sup></b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Ammonia	7664-41-7	926000	926000	19838000	5298000
Carbon monoxide	630-08-0	12440	9020	19220	12596
Diesel engine exhaust, particulate matter (PM)	9901 <sup>1</sup>	2700	2700	12720	5563
Nitrogen oxides (NO <sub>x</sub> )	42603 <sup>1</sup>	11140	6020	14140	9871
Particulate matter (PM)	11101 <sup>1</sup>	5311	754	9082	4364
PM10	11101 <sup>1</sup>	3240	460	5540	2662
PM2.5	11101 <sup>1</sup>	2948	419	5040	2422
Reactive organic gases (ROG)	ROGC <sup>1</sup>	2740	2140	3880	2849
Total organic gases (TOG)	43101 <sup>1</sup>	3880	2140	7247	4898

<sup>1</sup> Pollutant ID is reported as CASRN was unavailable.