HEALTHY AIR LIVING™

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

AB 2588 "Hot Spots" Air Toxics Profiles

January 6, 2023

Air Toxics Profiles for Use under AB 2588 Air Toxics "Hot Spots" Information and Assessment Act

One of the requirements of an AB 2588 "Hot Spots" Toxics Emissions Inventory Plan (TEIP) is to include identification and quantification methods of listed air toxic substances being emitted. The San Joaquin Valley Air Pollution Control District (District) provides air toxic profiles for use in estimating air toxic emissions for compliance with the AB2588 "Hot Spots" program. Toxic profiles not on this list require review by the District for approval. The toxic profiles listed below provide emission factors and speciation profiles for various facility devices arranged broadly by activity type.

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Abrasive Blasting

Abrasive Blasting Sand

District Toxic Profile ID	279
Description	AB Sandblasting Metal EPA Combo PM10
Source	* Emission factors are derived from a 1998 NIOSH report, Evaluation of Substitute Materials for Silica Sand In Abrasive Blasting, test data used from post blast bulk elemental analysis from the field study. ^Sandblasting emission factors for Cd, Cr, Mn, Ni, and Pb are derived from emission factor table 4-6 for PM-10 Metals in the September 1997 Emission Factor Documentation for AP-42 Section 13.2.6 Abrasive Blasting.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	8.70E-04	lb/lb PM10	7429905
Arsenic	8.00E-07	lb/lb PM10	7440382
Barium	5.60E-06	lb/lb PM10	7440393
Beryllium	8.00E-08	lb/lb PM10	7440417
Cadmium	1.69E-06	lb/lb PM10	7440439
Chromium	6.10E-06	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	3.05E-07	lb/lb PM10	18540299
Cobalt	1.00E-06	lb/lb PM10	7440484
Copper	6.60E-06	lb/lb PM10	7440508
Lead	7.00E-06	lb/lb PM10	7439921
Manganese	3.70E-06	lb/lb PM10	7439965
Nickel	5.10E-06	lb/lb PM10	7440020
Phosphorus	5.10E-05	lb/lb PM10	7723140
Selenium	2.50E-06	lb/lb PM10	7782492
Silver	1.50E-07	lb/lb PM10	7440224
Thallium	4.50E-06	lb/lb PM10	7440280
Vanadium (fume or dust)	3.60E-06	lb/lb PM10	7440622
Zinc	5.00E-06	lb/lb PM10	7440666

Abrasive Blasting Garnet

District Toxic Profile ID	282
Description	AB Garnet Metal EPA Combo PM10
Source	* Emission factors are derived from a 1998 NIOSH report, Evaluation of Substitute Materials for Silica Sand In Abrasive Blasting, test data used from post blast bulk elemental analysis from the field study. ^Sandblasting emission factors for Cd, Cr, Mn, Ni, and Pb are derived from emission factor table 4-6 for PM-10 Metals in the September 1997 Emission Factor Documentation for AP-42 Section 13.2.6 Abrasive Blasting. For other abrasives besides Sandblasting, the emission factors for Cr, Mn, Ni, and Pb were derived from table 13, "Emission factors for PMresp. Metals", in the EPA research study, Emission Factors for Abrasive Materials. The AP-42 value for cadmium for sandblasting was used in these other abrasives.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	9.40E-04	lb/lb PM10	7429905
Arsenic	2.50E-07	lb/lb PM10	7440382
Barium	7.20E-07	lb/lb PM10	7440393
Beryllium	1.00E-08	lb/lb PM10	7440417
Cadmium	3.00E-08	lb/lb PM10	7440439
Chromium	2.73E-06	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.37E-07	lb/lb PM10	18540299
Cobalt	2.10E-06	lb/lb PM10	7440484
Copper	3.90E-06	lb/lb PM10	7440508
Lead	2.44E-07	lb/lb PM10	7439921
Manganese	2.84E-04	lb/lb PM10	7439965
Nickel	7.45E-07	lb/lb PM10	7440020
Phosphorus	1.30E-04	lb/lb PM10	7723140
Selenium	2.50E-06	lb/lb PM10	7782492
Silver	1.50E-07	lb/lb PM10	7440224
Thallium	4.50E-06	lb/lb PM10	7440280
Vanadium (fume or dust)	4.00E-07	lb/lb PM10	7440622
Zinc	1.00E-06	lb/lb PM10	7440666

Abrasive Blasting Steel Grit

District Toxic Profile ID	283
Description	AB Steel Grit Metal EPA Combo PM10
Source	* Emission factors are derived from a 1998 NIOSH report, Evaluation of Substitute Materials for Silica Sand In Abrasive Blasting, test data used from post blast bulk elemental analysis from the field study. ^Sandblasting emission factors for Cd, Cr, Mn, Ni, and Pb are derived from emission factor table 4-6 for PM-10 Metals in the September 1997 Emission Factor Documentation for AP-42 Section 13.2.6 Abrasive Blasting. For other abrasives besides Sandblasting, the emission factors for Cr, Mn, Ni, and Pb were derived from table 13, "Emission factors for PMresp. Metals", in the EPA research study, Emission Factors for Abrasive Materials. The AP-42 value for cadmium for sandblasting was used in these other abrasives.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	4.30E-04	lb/lb PM10	7429905
Arsenic	4.80E-05	lb/lb PM10	7440382
Barium	3.40E-06	lb/lb PM10	7440393
Beryllium	5.00E-09	lb/lb PM10	7440417
Cadmium	1.00E-08	lb/lb PM10	7440439
Chromium	2.45E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.22E-06	lb/lb PM10	18540299
Cobalt	4.60E-05	lb/lb PM10	7440484
Copper	1.20E-03	lb/lb PM10	7440508
Lead	1.63E-07	lb/lb PM10	7439921
Manganese	1.36E-04	lb/lb PM10	7439965
Nickel	1.26E-05	lb/lb PM10	7440020
Phosphorus	3.50E-04	lb/lb PM10	7723140
Selenium	7.00E-05	lb/lb PM10	7782492
Silver	5.00E-07	lb/lb PM10	7440224
Thallium	2.00E-05	lb/lb PM10	7440280
Vanadium (fume or dust)	7.70E-05	lb/lb PM10	7440622
Zinc	5.70E-05	lb/lb PM10	7440666

Agriculture

Agricultural Dust

District Toxic Profile ID	40
Description	Agricultural Dust
Source	Emission factors are derived from a worst case composite of 1997 San Joaquin Valley soil profiles listed in EPA's speciation program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.26E-01	lb/lb PM10	7429905
Ammonia	2.94E-03	lb/lb PM10	7664417
Antimony	6.23E-04	lb/lb PM10	7440360
Arsenic	2.70E-05	lb/lb PM10	7440382
Barium	1.76E-03	lb/lb PM10	7440393
Bromine	1.30E-05	lb/lb PM10	7726956
Cadmium	2.27E-04	lb/lb PM10	7440439
Chlorine	1.92E-03	lb/lb PM10	7782505
Chromium, hexavalent (& compounds)	4.05E-06	lb/lb PM10	18540299
Copper	4.88E-04	lb/lb PM10	7440508
Lead	8.60E-05	lb/lb PM10	7439921
Manganese	1.28E-03	lb/lb PM10	7439965
Mercury	2.30E-05	lb/lb PM10	7439976
Molybdenum trioxide	4.10E-05	lb/lb PM10	1313275
Nickel	6.40E-05	lb/lb PM10	7440020
Phosphorus	2.70E-03	lb/lb PM10	7723140
Selenium	9.00E-06	lb/lb PM10	7782492
Silver	1.24E-04	lb/lb PM10	7440224
SULFATES	1.71E-02	lb/lb PM10	9960
Thallium	1.90E-05	lb/lb PM10	7440280
Vanadium (fume or dust)	1.26E-04	lb/lb PM10	7440622
Zinc	3.70E-03	lb/lb PM10	7440666

Almond Processing Dust Emissions

District Toxic Profile ID	58
Description	Almond Processing Dust Emissions
Source	Emission factors are derived from the 1997 soil profile, "Composite of three almond orchards" from EPA Speciate 4.0., test data from Central Valley CA Almond Growers.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	9.58E-02	lb/lb PM10	7429905
Ammonia	1.98E-03	lb/lb PM10	7664417
Antimony	1.02E-04	lb/lb PM10	7440360
Arsenic	5.00E-06	lb/lb PM10	7440382
Barium	8.75E-04	lb/lb PM10	7440393
Bromine	1.10E-05	lb/lb PM10	7726956
Cadmium	3.00E-06	lb/lb PM10	7440439
Chromium	1.20E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	6.00E-07	lb/lb PM10	18540299
Cobalt	8.00E-06	lb/lb PM10	7440484
Copper	1.69E-04	lb/lb PM10	7440508
Lead	6.20E-05	lb/lb PM10	7439921
Manganese	1.04E-03	lb/lb PM10	7439965
Mercury	1.30E-05	lb/lb PM10	7439976
Nickel	1.20E-05	lb/lb PM10	7440020
Phosphorus	1.57E-03	lb/lb PM10	7723140
Selenium	3.00E-06	lb/lb PM10	7782492
Silver	3.00E-06	lb/lb PM10	7440224
SULFATES	1.01E-02	lb/lb PM10	9960
Vanadium (fume or dust)	4.20E-05	lb/lb PM10	7440622
Zinc	1.58E-03	lb/lb PM10	7440666

Biosolids Composting

District Toxic Profile ID	115
Description	Biosolids Composting
Source	Emission factors are derived from the1997 Source Test Report for the Biofilter/Sewage Sludge Composting System-Griffith Park Hyperion Treatment Plant.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1-Dichloroethane	2.75E-04	lb/lb VOC	75343
Benzene	4.60E-05	lb/lb VOC	71432
Carbon disulfide	1.04E-03	lb/lb VOC	75150
Carbonyl sulfide	1.14E-03	lb/lb VOC	463581
Methyl chloride {Chloromethane}	5.48E-05	lb/lb VOC	74873
Methyl chloroform {1,1,1-TCA}	2.08E-04	lb/lb VOC	71556
Methyl ethyl ketone {2-Butanone}	9.28E-03	lb/lb VOC	78933
Methylene chloride {Dichloromethane}	6.76E-03	lb/lb VOC	75092
Perchloroethylene {Tetrachloroethene}	4.61E-04	lb/lb VOC	127184
Styrene	2.38E-04	lb/lb VOC	100425
Toluene	1.37E-04	lb/lb VOC	108883
Vinyl acetate	1.63E-03	lb/lb VOC	108054

Compost Dust Biosolids Emissions

District Toxic Profile ID	248
Description	Compost Dust Biosolids Emissions
Source	Emission Factors are derived from source tests at San Joaquin Composting (S-360). Used maximum values from semi-annual load checks conducted in 2000.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Antimony	5.00E-06	lb/lb PM10	7440360
Arsenic	1.30E-05	lb/lb PM10	7440382
Barium	1.20E-03	lb/lb PM10	7440393
Beryllium	5.00E-07	lb/lb PM10	7440417
Cadmium	1.30E-05	lb/lb PM10	7440439
Chromium	2.90E-04	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.00E-07	lb/lb PM10	18540299
Cobalt	4.60E-05	lb/lb PM10	7440484
Copper	8.85E-04	lb/lb PM10	7440508
Lead	8.20E-05	lb/lb PM10	7439921
Mercury	4.40E-06	lb/lb PM10	7439976
Nickel	1.10E-04	lb/lb PM10	7440020
Selenium	5.20E-05	lb/lb PM10	7782492
Silver	4.50E-05	lb/lb PM10	7440224
Thallium	5.00E-05	lb/lb PM10	7440280
Vanadium (fume or dust)	8.50E-05	lb/lb PM10	7440622
Zinc	9.80E-04	lb/lb PM10	7440666

Compost Dust Cocomposting Emissions

District Toxic Profile ID	247
Description	Compost Dust Cocomposting Emissions
Source	Emission Factors are derived from compost analysis in Appendix C of the 2011 report, Biosolids Co-Composting VOC and Ozone Formation Study. The Maximum values were used from the data.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.10E-02	lb/lb PM10	7429905
Arsenic	3.80E-06	lb/lb PM10	7440382
Cadmium	1.30E-06	lb/lb PM10	7440439
Chromium	5.00E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.50E-06	lb/lb PM10	18540299
Cobalt	5.40E-06	lb/lb PM10	7440484
Copper	1.80E-04	lb/lb PM10	7440508
Lead	3.10E-05	lb/lb PM10	7439921
Manganese	6.90E-04	lb/lb PM10	7439965
Mercury	2.10E-06	lb/lb PM10	7439976
Nickel	3.00E-05	lb/lb PM10	7440020
Phosphorus	2.00E-02	lb/lb PM10	7723140
Selenium	2.70E-06	lb/lb PM10	7782492
Zinc	4.80E-04	lb/lb PM10	7440666

Compost Dust Green Waste Emissions

District Toxic Profile ID	246
Description	Compost Dust Green Waste Emissions
Source	Emission Factors are from Table 15, "Trace and Heavy Metals" (page 62) from the 2010 report, Landfill-Based Anaerobic Digester-Compost Pilot Project at Yolo County Central Landfill.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.30E-02	lb/lb PM10	7429905
Arsenic	6.20E-06	lb/lb PM10	7440382
Cadmium	2.00E-06	lb/lb PM10	7440439
Chromium	4.90E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.45E-06	lb/lb PM10	18540299
Cobalt	8.80E-06	lb/lb PM10	7440484
Copper	6.90E-05	lb/lb PM10	7440508
Lead	2.00E-04	lb/lb PM10	7439921
Manganese	4.40E-04	lb/lb PM10	7439965
Mercury	1.00E-06	lb/lb PM10	7439976
Nickel	9.50E-05	lb/lb PM10	7440020
Selenium	1.00E-06	lb/lb PM10	7782492
Zinc	1.70E-04	lb/lb PM10	7440666

Composting Green Waste VOCs

District Toxic Profile ID	149
Description	Composting Green Waste VOCs
Source	Emission factors are derived from the VOC profile 1616, "Green Waste Composting" from EPA Speciate 4.4, test data from the 2011 article Volatile organic compound emissions from green waste composting: Characterization and ozone formation in the journal, Atmospheric Environment,(45, 2011, 1841-1848)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	1.40E-03	lb/lb VOC	75070
Isopropyl alcohol	4.23E-01	lb/lb VOC	67630
Methanol	1.28E-01	lb/lb VOC	67561
Naphthalene	5.00E-03	lb/lb VOC	91203
Propylene	2.20E-03	lb/lb VOC	115071
sec-Butyl alcohol	3.90E-03	lb/lb VOC	78922

Cotton Gin - PM Speciation

District Toxic Profile ID	139
Description	Cotton Gin - PM Speciation
Source	based source tests performed by the California Cotton Ginners Association in response to AB2588 (1991)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Arsenic	5.70E-06	lbs/lb PM	7440382
Cadmium	1.00E-06	lbs/lb PM	7440439
Chromium, hexavalent (& compounds)	3.39E-07	lbs/lb PM	18540299
Copper	2.10E-05	lbs/lb PM	7440508
Lead	1.60E-05	lbs/lb PM	7439921
Manganese	1.00E-04	lbs/lb PM	7439965
Nickel	7.00E-06	lbs/lb PM	7440020
Selenium	1.00E-05	lbs/lb PM	7782492
Zinc	4.70E-05	lbs/lb PM	7440666

Feed Pelleting, Milling, Loadout lb

District Toxic Profile ID	209
Description	Feed Pelleting, Milling, Loadout lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Cadmium	4.28E-07	lb/lb PM	7440439
Chromium	3.32E-06	lb/lb PM	7440473
Chromium, hexavalent (& compounds)	1.66E-07	lb/lb PM	18540299
Copper	1.84E-05	lb/lb PM	7440508
Lead	4.77E-07	lb/lb PM	7439921
Manganese	4.45E-05	lb/lb PM	7439965
Nickel	8.90E-06	lb/lb PM	7440020
Zinc	5.50E-05	lb/lb PM	7440666

Feed Receiving lb

District Toxic Profile ID	210
Description	Feed Receiving lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Cadmium	1.29E-07	lb/lb PM	7440439
Chromium	1.21E-06	lb/lb PM	7440473
Chromium, hexavalent (& compounds)	6.05E-08	lb/lb PM	18540299
Copper	1.30E-05	lb/lb PM	7440508
Lead	8.15E-07	lb/lb PM	7439921
Manganese	4.40E-05	lb/lb PM	7439965
Nickel	6.40E-06	lb/lb PM	7440020
Zinc	4.78E-05	lb/lb PM	7440666

Flour Mill Loadout lb

District Toxic Profile ID	212
Description	Flour Mill Loadout lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Copper	6.25E-06	lb/lb PM	7440508
Manganese	7.20E-05	lb/lb PM	7439965
Zinc	3.57E-05	lb/lb PM	7440666

Flour Mill Receiving lb

District Toxic Profile ID	211
Description	Flour Mill Receiving lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Copper	5.54E-06	lb/lb PM	7440508
Manganese	5.47E-05	lb/lb PM	7439965
Zinc	2.97E-05	lb/lb PM	7440666

Grain Cleaning lb

District Toxic Profile ID	96
Description	Grain Cleaning lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test and AP42 section 9.9.1. CONVERSION FACTOR for process rate (tons) into tons dust is (0.0823 lb PM10/2000)/ton grain

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Cadmium	3.60E-07	lb/lb PM10	7440439
Copper	1.59E-05	lb/lb PM10	7440508
Lead	9.55E-07	lb/lb PM10	7439921
Manganese	3.82E-05	lb/lb PM10	7439965
Nickel	6.96E-06	lb/lb PM10	7440020
Zinc	4.80E-05	lb/lb PM10	7440666

Grain Elevator Receiving lb

District Toxic Profile ID	213
Description	Grain Elevator Receiving lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Copper	5.47E-06	lb/lb PM	7440508
Manganese	3.20E-05	lb/lb PM	7439965
Zinc	2.07E-05	lb/lb PM	7440666

Grain Loadout lb

District Toxic Profile ID	214
Description	Grain Loadout lb
Source	Emission factors are based on ARB approved California Grain & Feed Association pooled source test (Dec. 1990)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Chromium	1.20E-06	lb/lb PM	7440473
Chromium, hexavalent (& compounds)	6.00E-08	lb/lb PM	18540299
Copper	2.87E-06	lb/lb PM	7440508
Lead	2.77E-06	lb/lb PM	7439921
Manganese	1.87E-05	lb/lb PM	7439965
Zinc	1.06E-05	lb/lb PM	7440666

Red Wine Fermentation VOC

District Toxic Profile ID	270
Description	Red Wine Fermentation VOC
Source	* The emission factors are derived from Table 9.12-2-1 (pg. 8), "Emission Factors for Wine Fermentation" in October 1995 AP 42, Fifth Edition, Volume I, Chapter 9: Food and Agricultural Industries, Section 9.12.2: Wines and Brandy. Assumes a worst case estimate that the VOCs are equivalent to Ethanol emissions. Emission factors are also from carbon tube sample data in the 1988 CARB report, Ethanol Emissions and Control for Wine Fermentation and Tanks

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	5.87E-04	lb/lb VOC	75070
Benzene	3.41E-08	lb/lb VOC	71432
Hydrogen sulfide	3.70E-04	lb/lb VOC	7783064
Methanol	5.43E-04	lb/lb VOC	67561
Naphthalene	5.00E-10	lb/lb VOC	91203
n-Butyl alcohol	1.20E-05	lb/lb VOC	71363
sec-Butyl alcohol	9.78E-06	lb/lb VOC	78922
Toluene	3.17E-08	lb/lb VOC	108883
Xylenes (mixed)	3.51E-08	lb/lb VOC	1330207

White Wine Fermentation VOC

District Toxic Profile ID	271
Description	White Wine Fermentation VOC
Source	* The emission factors are derived from Table 9.12-2-1 (pg. 8), "Emission Factors for Wine Fermentation" in October 1995 AP 42, Fifth Edition, Volume I, Chapter 9: Food and Agricultural Industries, Section 9.12.2: Wines and Brandy. Assumes a worst case estimate that the VOCs are equivalent to Ethanol emissions. Emission factors are also from carbon tube sample data in the 1988 CARB report, Ethanol Emissions and Control for Wine Fermentation and Tanks

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.00E-05	lb/ lb VOC	75070
Benzene	1.70E-10	lb/ lb VOC	71432
Ethyl benzene	1.04E-09	lb/ lb VOC	100414
Hydrogen sulfide	7.78E-04	lb/ lb VOC	7783064
Methanol	3.56E-04	lb/ lb VOC	67561
Naphthalene	6.20E-10	lb/ lb VOC	91203
Toluene	1.35E-08	lb/ lb VOC	108883
Xylenes (mixed)	5.64E-09	lb/ lb VOC	1330207

Z3 FS VOC's Composting- Greenwaste/Biosolid

District Toxic Profile ID	122
Description	Z3 FS VOC's Composting- Greenwaste/Biosolid
Source	*Emission factors are derived from the VOC profile provided by a source test from Westlake Farms (C-6048, 1111582, County Sanitation Districts of LA Co.)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	2.00E-09	lb/lb VOC	71432
Carbon disulfide	4.91E-08	lb/lb VOC	75150
Hydrogen sulfide	3.22E-07	lb/lb VOC	7783064
Methyl chloroform {1,1,1-TCA}	3.30E-09	lb/lb VOC	71556
Methyl ethyl ketone {2-Butanone}	2.50E-07	lb/lb VOC	78933
Methylene chloride {Dichloromethane}	4.00E-09	lb/lb VOC	75092
Perchloroethylene {Tetrachloroethene}	9.00E-09	lb/lb VOC	127184
Styrene	7.80E-09	lb/lb VOC	100425
Toluene	4.70E-09	lb/lb VOC	108883
Trichloroethylene	1.04E-08	lb/lb VOC	79016
Vinyl acetate	2.00E-09	lb/lb VOC	108054

External Combustion

Auto Parts Bayco Cleaning Oven Material

District Toxic Profile ID	110
Description	Auto Parts Bayco Cleaning Oven Material
Source	These emission factors are derived from a 1991 source test from Champion Auto Parts Toxic Environmental Impact Report #40028

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Arsenic	1.29E-08	lb/lb material burned	7440382
Benzene	2.10E-06	lb/lb material burned	71432
Beryllium	1.69E-08	lb/lb material burned	7440417
Cadmium	1.69E-06	lb/lb material burned	7440439
Chromium, hexavalent (& compounds)	6.37E-10	lb/lb material burned	18540299
Copper	5.22E-07	lb/lb material burned	7440508
Formaldehyde	1.76E-08	lb/lb material burned	50000
Hydrochloric acid	2.20E-05	lb/lb material burned	7647010
Lead	2.42E-07	lb/lb material burned	7439921
Manganese	1.50E-08	lb/lb material burned	7439965
Mercury	2.05E-08	lb/lb material burned	7439976
Nickel	1.69E-08	lb/lb material burned	7440020
Selenium	2.44E-09	lb/lb material burned	7782492
Vinyl chloride	1.42E-08	lb/lb material burned	75014
Zinc	2.13E-07	lb/lb material burned	7440666

Auto Parts Bayco Cleaning Oven NG use

District Toxic Profile ID	187
Description	Auto Parts Bayco Cleaning Oven NG use
Source	These emission factors are derived from a 1991 source test from Champion Auto Parts Toxic Environmental Impact Report #40028 and Ventura County emission factors for combustion of Natural Gas

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.49E-07	lbs/MMscf	67562394
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	2.09E-07	lbs/MMscf	35822469
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.43E-08	lbs/MMscf	55673897
1,2,3,4,7,8-Hexachlorodibenzofuran	2.94E-07	lbs/MMscf	70648269
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.66E-08	lbs/MMscf	39227286
1,2,3,6,7,8-Hexachlorodibenzofuran	2.02E-07	lbs/MMscf	57117449
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	3.45E-08	lbs/MMscf	57653857
1,2,3,7,8,9-Hexachlorodibenzofuran	4.41E-08	lbs/MMscf	72918219
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.84E-08	lbs/MMscf	19408743
1,2,3,7,8-Pentachlorodibenzofuran	9.92E-07	lbs/MMscf	57117416
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.72E-08	lbs/MMscf	40321764
2,3,4,6,7,8-Hexachlorodibenzofuran	2.48E-07	lbs/MMscf	60851345
2,3,4,7,8-Pentachlorodibenzofuran	1.55E-06	lbs/MMscf	57117314
2,3,7,8-Tetrachlorodibenzofuran	5.75E-06	lbs/MMscf	51207319
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.89E-08	lbs/MMscf	1746016
Acetaldehyde	5.35E-06	lbs/MMscf	75070
Acrolein	8.00E-04	lbs/MMscf	107028
Benz[a]anthracene	9.99E-05	lbs/MMscf	56553
Benzene	1.57E-04	lbs/MMscf	71432
Benzo[a]pyrene	2.20E-05	lbs/MMscf	50328
Benzo[b]fluoranthene	8.85E-05	lbs/MMscf	205992
Benzo[k]fluoranthene	4.39E-05	lbs/MMscf	207089
Dibenz[a,h]anthracene	7.48E-06	lbs/MMscf	53703
Dibenzofurans (chlorinated) {PCDFs}	8.24E-08	lbs/MMscf	1080
Dioxins, total, with individ. isomers also reported {PCDDs}	3.14E-07	lbs/MMscf	1085
Ethyl benzene	2.00E-03	lbs/MMscf	100414
Formaldehyde	1.08E-04	lbs/MMscf	50000
Hexane	1.30E-03	lbs/MMscf	110543
Indeno[1,2,3-cd]pyrene	2.43E-05	lbs/MMscf	193395
Naphthalene	9.19E-05	lbs/MMscf	91203
Polychlorinated biphenyls (PCBs)	2.33E-05	lbs/MMscf	1336363
Toluene	1.87E-04	lbs/MMscf	108883
Xylenes (mixed)	8.53E-04	lbs/MMscf	1330207

Cotton Gin - NG Combustion

District Toxic Profile ID	140
Description	Cotton Gin - NG Combustion
Source	The emission factors are from the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors (< 10 Mmbtu/hr, External).

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.30E-03	lb/MMscf	75070
Acrolein	2.70E-03	lb/MMscf	107028
Benzene	8.00E-03	lb/MMscf	71432
Ethyl benzene	9.50E-03	lb/MMscf	100414
Formaldehyde	1.70E-02	lb/MMscf	50000
Hexane	6.30E-03	lb/MMscf	110543
Naphthalene	3.00E-04	lb/MMscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/MMscf	1151
Propylene	7.31E-01	lb/MMscf	115071
Toluene	3.66E-02	lb/MMscf	108883
Xylenes (mixed)	2.72E-02	lb/MMscf	1330207

Crematory Animal

District Toxic Profile ID	22
Description	Crematory Animal
Source	Emission factors are derived from SDAPCD's 1993 profile "Crematory and Incinerator Operations", test data from 1990 UCSD Medical Center AB2588 Source Testing.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	1.50E-03	lb/tons of animal cremated	75070
Arsenic	5.80E-04	lb/tons of animal cremated	7440382
Benzene	7.20E-04	lb/tons of animal cremated	71432
Beryllium	2.00E-05	lb/tons of animal cremated	7440417
Cadmium	1.60E-04	lb/tons of animal cremated	7440439
Chromium	3.20E-04	lb/tons of animal cremated	7440473
Chromium, hexavalent (& compounds)	1.90E-04	lb/tons of animal cremated	18540299
Copper	4.00E-04	lb/tons of animal cremated	7440508
Formaldehyde	4.00E-04	lb/tons of animal cremated	50000
Hydrochloric acid	8.60E-01	lb/tons of animal cremated	7647010
Hydrogen fluoride	7.80E-03	lb/tons of animal cremated	7664393
Lead	9.80E-04	lb/tons of animal cremated	7439921
Mercury	4.80E-02	lb/tons of animal cremated	7439976
Nickel	5.70E-04	lb/tons of animal cremated	7440020
PAHs, total, w/o individ. components reported	5.20E-05	lb/tons of animal cremated	1151
Selenium	6.50E-04	lb/tons of animal cremated	7782492
Toluene	9.90E-03	lb/tons of animal cremated	108883
Xylenes (mixed)	2.80E-03	lb/tons of animal cremated	1330207
Zinc	5.20E-04	lb/tons of animal cremated	7440666

Crematory Human-body

District Toxic Profile ID	250
Description	Crematory Human-body
Source	Emissions factors (lb/body cremated) are from Table 19 "Point Source Emission Factors", Crematory Major Group (pg. 127) in the December 1999 CARB research report, Development Of Toxics Emission Factors From Source Test Data Collected Under The Air Toxics Hot Spots Program Part II Final Report Volume I, test data from a 1993 creamatory source test. Average weight of cremation assumed to be 80kg or 176 pounds.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.15E-08	lb/body	67562394
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	8.37E-09	lb/body	35822469
1,2,3,4,7,8,9-Heptachlorodibenzofuran	7.76E-10	lb/body	55673897
1,2,3,4,7,8-Hexachlorodibenzofuran	1.97E-09	lb/body	70648269
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	6.26E-10	lb/body	39227286
1,2,3,6,7,8-Hexachlorodibenzofuran	1.97E-09	lb/body	57117449
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	9.51E-10	lb/body	57653857
1,2,3,7,8,9-Hexachlorodibenzofuran	3.72E-09	lb/body	72918219
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.28E-09	lb/body	19408743
1,2,3,7,8-Pentachlorodibenzofuran	6.74E-10	lb/body	57117416
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	4.42E-10	lb/body	40321764
2,3,4,6,7,8-Hexachlorodibenzofuran	7.42E-10	lb/body	60851345
2,3,4,7,8-Pentachlorodibenzofuran	1.74E-09	lb/body	57117314
2,3,7,8-Tetrachlorodibenzofuran	8.01E-10	lb/body	51207319
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.50E-10	lb/body	1746016
Acenaphthene	1.16E-07	lb/body	83329
Acenaphthylene	8.38E-08	lb/body	208968
Acetaldehyde	1.39E-04	lb/body	75070
Anthracene	2.50E-07	lb/body	120127
Arsenic	6.16E-05	lb/body	7440382
Barium	2.60E-05	lb/body	7440393
Benz[a]anthracene	1.30E-08	lb/body	56553
Benzo[a]pyrene	6.60E-08	lb/body	50328
Benzo[b]fluoranthene	1.84E-08	lb/body	205992
Benzo[g,h,i]perylene	6.18E-08	lb/body	191242
Benzo[k]fluoranthene	1.46E-08	lb/body	207089
Beryllium	2.60E-06	lb/body	7440417
Cadmium	1.02E-05	lb/body	7440439
Chromium	4.27E-05	lb/body	7440473
Chromium, hexavalent (& compounds)	1.96E-05	lb/body	18540299
Chrysene	3.03E-08	lb/body	218019
Cobalt	1.36E-05	lb/body	7440484
Copper	2.92E-05	lb/body	7440508
Dibenz[a,h]anthracene	1.36E-08	lb/body	53703
Fluoranthene	1.52E-07	lb/body	206440
Fluorene	3.39E-07	lb/body	86737
Formaldehyde	2.99E-05	lb/body	50000
Hydrochloric acid	9.47E-02	lb/body	7647010
Hydrogen fluoride	1.41E-03	lb/body	7664393
Indeno[1,2,3-cd]pyrene	1.46E-08	lb/body	193395
Lead	6.29E-05	lb/body	7439921
Mercury	4.99E-03	lb/body	7439976
Naphthalene	6.78E-05	lb/body	91203
Nickel	3.83E-05	lb/body	7440020
Phenanthrene	1.78E-06	lb/body	85018
Pyrene	1.64E-07	lb/body	129000
Selenium	4.48E-05	lb/body	7782492
Silver	1.23E-05	lb/body	7440224
Zinc	4.06E-04	lb/body	7440666

Crematory Human-tons

District Toxic Profile ID	109
Description	Crematory Human-tons
Source	Emissions factors (lb/body cremated) are from Table 19 "Point Source Emission Factors", Crematory Major Group (pg. 127) in the December 1999 CARB research report, Development Of Toxics Emission Factors From Source Test Data Collected Under The Air Toxics Hot Spots Program Part II Final Report Volume I, test data from a 1993 creamatory source test. Average weight of cremation assumed to be 80kg or 176 pounds.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.31E-07	lb/ton material	67562394
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	9.51E-08	lb/ton material	35822469
1,2,3,4,7,8,9-Heptachlorodibenzofuran	8.82E-09	lb/ton material	55673897
1,2,3,4,7,8-Hexachlorodibenzofuran	2.24E-08	lb/ton material	70648269
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	7.11E-09	lb/ton material	39227286
1,2,3,6,7,8-Hexachlorodibenzofuran	2.24E-08	lb/ton material	57117449
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.08E-08	lb/ton material	57653857
1,2,3,7,8,9-Hexachlorodibenzofuran	4.23E-08	lb/ton material	72918219
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.45E-08	lb/ton material	19408743
1,2,3,7,8-Pentachlorodibenzofuran	7.66E-09	lb/ton material	57117416
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	5.02E-09	lb/ton material	40321764
2,3,4,6,7,8-Hexachlorodibenzofuran	8.43E-09	lb/ton material	60851345
2,3,4,7,8-Pentachlorodibenzofuran	1.98E-08	lb/ton material	57117314
2,3,7,8-Tetrachlorodibenzofuran	9.10E-09	lb/ton material	51207319
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.70E-09	lb/ton material	1746016
Acenaphthene	1.32E-06	lb/ton material	83329
Acenaphthylene	9.52E-07	lb/ton material	208968
Acetaldehyde	1.58E-03	lb/ton material	75070
Anthracene	2.84E-06	lb/ton material	120127
Arsenic	7.00E-04	lb/ton material	7440382
Barium	2.95E-04	lb/ton material	7440393
Benz[a]anthracene	1.48E-07	lb/ton material	56553
Benzo[a]pyrene	7.50E-07	lb/ton material	50328
Benzo[b]fluoranthene	2.09E-07	lb/ton material	205992
Benzo[g,h,i]perylene	7.02E-07	lb/ton material	191242
Benzo[k]fluoranthene	1.66E-07	lb/ton material	207089
Beryllium	2.95E-05	lb/ton material	7440417
Cadmium	1.16E-04	lb/ton material	7440439
Chromium	4.85E-04	lb/ton material	7440473
Chromium, hexavalent (& compounds)	2.23E-04	lb/ton material	18540299
Chrysene	3.44E-07	lb/ton material	218019
Cobalt	1.55E-04	lb/ton material	7440484
Copper	3.32E-04	lb/ton material	7440508
Dibenz[a,h]anthracene	1.55E-07	lb/ton material	53703
Fluoranthene	1.73E-06	lb/ton material	206440
Fluorene	3.85E-06	lb/ton material	86737
Formaldehyde	3.40E-04	lb/ton material	50000
Hydrochloric acid	1.08E+00	lb/ton material	7647010
Hydrogen fluoride	1.60E-02	lb/ton material	7664393
Indeno[1,2,3-cd]pyrene	1.66E-07	lb/ton material	193395
Lead	7.15E-04	lb/ton material	7439921
Mercury	5.67E-02	lb/ton material	7439976
Naphthalene	7.70E-04	lb/ton material	91203
Nickel	4.35E-04	lb/ton material	7440020
Phenanthrene	2.02E-05	lb/ton material	85018
Pyrene	1.86E-06	lb/ton material	129000
Selenium	5.09E-04	lb/ton material	7782492
Silver	1.40E-04	lb/ton material	7440224
Zinc	4.61E-03	lb/ton material	7440666

Diesel External Combustion

District Toxic Profile ID	2
Description	Diesel External Combustion
Source	The emission factors are from the table "Diesel Combustion Factors" (pg. 3, external combustion column) in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	1.48E-02	lb/1000 gals	106990
Acetaldehyde	3.51E-01	lb/1000 gals	75070
Acrolein	3.51E-01	lb/1000 gals	107028
Arsenic	1.60E-03	lb/1000 gals	7440382
Benzene	4.40E-03	lb/1000 gals	71432
Cadmium	1.50E-03	lb/1000 gals	7440439
Chlorobenzene	2.00E-04	lb/1000 gals	108907
Chromium	6.00E-04	lb/1000 gals	7440473
Chromium, hexavalent (& compounds)	1.00E-04	lb/1000 gals	18540299
Copper	4.10E-03	lb/1000 gals	7440508
Ethyl benzene	2.00E-04	lb/1000 gals	100414
Formaldehyde	3.51E-01	lb/1000 gals	50000
Hexane	3.50E-03	lb/1000 gals	110543
Hydrochloric acid	1.86E-01	lb/1000 gals	7647010
Lead	8.30E-03	lb/1000 gals	7439921
Manganese	3.10E-03	lb/1000 gals	7439965
Mercury	2.00E-03	lb/1000 gals	7439976
Naphthalene	5.30E-03	lb/1000 gals	91203
Nickel	3.90E-03	lb/1000 gals	7440020
PAHs, total, with individ. components also reported	4.45E-02	lb/1000 gals	1150
Propylene	1.00E-02	lb/1000 gals	115071
Selenium	2.20E-03	lb/1000 gals	7782492
Toluene	4.40E-03	lb/1000 gals	108883
Xylenes (mixed)	1.60E-03	lb/1000 gals	1330207
Zinc	2.24E-02	lb/1000 gals	7440666

Digester Gas External Comb (Farm waste, not Dairy)

District Toxic Profile ID	230
Description	Digester Gas External Comb (Farm waste, not Dairy)
Source	The emission factors are from the table, "Digester Gas External and Internal Combustion Factors as developed by San Diego Country Air Pollution Control District" in the November 1993 memo from SDAPCD.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Ammonia	3.72E-03	lbs/MMscf	7664417
Benzene	1.33E-03	lbs/MMscf	71432
Chlorobenzene	3.08E-04	lbs/MMscf	108907
Ethyl benzene	2.61E-02	lbs/MMscf	100414
Formaldehyde	1.46E+00	lbs/MMscf	50000
Hydrogen sulfide	1.17E+00	lbs/MMscf	7783064
Methyl chloroform {1,1,1-TCA}	4.19E-03	lbs/MMscf	71556
Methylene chloride {Dichloromethane}	8.67E-02	lbs/MMscf	75092
Perchloroethylene {Tetrachloroethene}	2.43E-03	lbs/MMscf	127184
Toluene	9.59E-03	lbs/MMscf	108883
Vinyl chloride	1.32E-03	lbs/MMscf	75014
Vinylidene chloride	3.08E-04	lbs/MMscf	75354
Xylenes (mixed)	5.57E-02	lbs/MMscf	1330207

Landfill Gas Ext Comb <10 MMBtu Def

District Toxic Profile ID	134
Description	Landfill Gas Ext Comb <10 MMBtu Def
Source	Methane (Natural Gas) combustion emissions are from table, "Natural Gas Fired External Combustion Equipment" in the May 2001 report, VCAPCD AB 2588 Combustion Emission Factors. PAHs emission factor adjusted from table values to subtract Naphthalene portion. Methane content and destruction efficiency are from District defaults. Landfill gas speciation is derived from Table 2.4-1, "Default Concentrations For LFG Constituents For Landfills With Waste In Place On Or After 1992" in October 2008 AP42 Chapter 2 Solid Waste Disposal, Section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.58E-03	lb/MMscf burned	79345
1,1,2-Trichloroethane	1.08E-03	lb/MMscf burned	79005
1,1-Dichloroethane	1.05E-02	lb/MMscf burned	75343
1,2,4-Trichlorobenzene	5.10E-05	lb/MMscf burned	120821
1,2,4-Trimethylbenzene	8.40E-03	lb/MMscf burned	95636
1,2-Dichloroethylene	5.64E-02	lb/MMscf burned	540590
1,3-Butadiene	4.58E-04	lb/MMscf burned	106990
1,4-Dioxane	3.73E-05	lb/MMscf burned	123911
2,2,4-Trimethylpentane	3.58E-03	lb/MMscf burned	540841
Acetaldehyde	2.54E-03	lb/MMscf burned	75070
Acetonitrile	1.16E-03	lb/MMscf burned	75058
Acrolein	1.49E-03	lb/MMscf burned	107028
Benzene	1.40E-02	lb/MMscf burned	71432
Benzyl chloride	1.17E-04	lb/MMscf burned	100447
Bromodichloromethane	7.34E-05	lb/MMscf burned	75274
Bromoform	1.60E-04	lb/MMscf burned	75252
Carbon disulfide	5.71E-04	lb/MMscf burned	75150
Carbon monoxide	3.49E-02	lb/MMscf burned	630080
Carbon tetrachloride	6.26E-05	lb/MMscf burned	56235
Carbonyl sulfide	3.74E-04	lb/MMscf burned	463581
Chlorinated fluorocarbon {CFC-113}	6.43E-04	lb/MMscf burned	76131
Chlorobenzene	2.78E-03	lb/MMscf burned	108907
Chlorodibromomethane	1.61E-04	lb/MMscf burned	124481
Chlorodifluoromethane {Freon 22}	3.51E-03	lb/MMscf burned	75456
Cumene	2.64E-03	lb/MMscf burned	98828
Cyclohexane	4.34E-03	lb/MMscf burned	110827
Dichlorodifluoromethane {Freon 12}	7.28E-03	lb/MMscf burned	75718
Ethyl benzene	3.16E-02	lb/MMscf burned	100414
Ethyl chloride {Chlorethane}	1.30E-02	lb/MMscf burned	75003
Ethylene dibromide {EDB}	4.60E-05	lb/MMscf burned	106934
Ethylene dichloride {EDC}	8.03E-04	lb/MMscf burned	107062
Formaldehyde	9.37E-03	lb/MMscf burned	50000
Hexachlorobutadiene	4.64E-05	lb/MMscf burned	87683
Hexane	1.71E-02	lb/MMscf burned	110543
Hydrogen sulfide	5.57E-02	lb/MMscf burned	7783064
Isoprene, except from vegetative emission sources	5.74E-05	lb/MMscf burned	78795
Isopropyl alcohol	5.52E-03	lb/MMscf burned	67630
Mercury	1.25E-06	lb/MMscf burned	7439976
Methyl bromide {Bromomethane}	1.02E-04	lb/MMscf burned	74839
Methyl chloride {Chloromethane}	6.29E-04	lb/MMscf burned	74873
Methyl chloroform {1,1,1-TCA}	1.65E-03	lb/MMscf burned	71556
Methyl ethyl ketone {2-Butanone}	1.48E-02	lb/MMscf burned	78933
Methyl isobutyl ketone {Hexone}	4.51E-03	lb/MMscf burned	108101
Methyl tert-butyl ether	5.31E-04	lb/MMscf burned	1634044
Methylene bromide	7.41E-06	lb/MMscf burned	74953
Methylene chloride {Dichloromethane}	2.67E-02	lb/MMscf burned	75092
Naphthalene	8.65E-04	lb/MMscf burned	91203

PAHs, total, w/o individ. components reported	5.50E-05	lb/MMscf burned	1151
p-Dichlorobenzene	7.05E-03	lb/MMscf burned	106467
Perchloroethylene {Tetrachloroethene}	1.72E-02	lb/MMscf burned	127184
Propylene	4.09E-01	lb/MMscf burned	115071
Styrene	2.18E-03	lb/MMscf burned	100425
Toluene	1.59E-01	lb/MMscf burned	108883
Trichloroethylene	5.55E-03	lb/MMscf burned	79016
Vinyl chloride	4.53E-03	lb/MMscf burned	75014
Vinylidene chloride	7.92E-04	lb/MMscf burned	75354
Xylenes (mixed)	6.50E-02	lb/MMscf burned	1330207

Landfill Gas Ext Comb 10-100 MMBtu Def

District Toxic Profile ID	235
Description	Landfill Gas Ext Comb 10-100 MMBtu Def
Source	Methane (Natural Gas) combustion emissions are from table, "Natural Gas Fired External Combustion Equipment" in the May 2001 report, VCAPCD AB 2588 Combustion Emission Factors. PAHs emission factor adjusted from table values to subtract Naphthalene portion. Methane content and destruction efficiency are from District defaults. Landfill gas speciation is derived from Table 2.4-1, "Default Concentrations For LFG Constituents For Landfills With Waste In Place On Or After 1992" in October 2008 AP42 Chapter 2 Solid Waste Disposal, Section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.58E-03	lbs/MMscf	79345
1,1,2-Trichloroethane	1.08E-03	lbs/MMscf	79005
1,1-Dichloroethane	1.05E-02	lbs/MMscf	75343
1,2,4-Trichlorobenzene	5.10E-05	lbs/MMscf	120821
1,2,4-Trimethylbenzene	8.40E-03	lbs/MMscf	95636
1,2-Dichloroethylene	5.64E-02	lbs/MMscf	540590
1,3-Butadiene	4.58E-04	lbs/MMscf	106990
1,4-Dioxane	3.73E-05	lbs/MMscf	123911
2,2,4-Trimethylpentane	3.58E-03	lbs/MMscf	540841
Acetaldehyde	1.88E-03	lbs/MMscf	75070
Acetonitrile	1.16E-03	lbs/MMscf	75058
Acrolein	1.49E-03	lbs/MMscf	107028
Benzene	1.28E-02	lbs/MMscf	71432
Benzyl chloride	1.17E-04	lbs/MMscf	100447
Bromodichloromethane	7.34E-05	lbs/MMscf	75274
Bromoform	1.60E-04	lbs/MMscf	75252
Carbon disulfide	5.71E-04	lbs/MMscf	75150
Carbon monoxide	3.49E-02	lbs/MMscf	630080
Carbon tetrachloride	6.26E-05	lbs/MMscf	56235
Carbonyl sulfide	3.74E-04	lbs/MMscf	463581
Chlorinated fluorocarbon {CFC-113}	6.43E-04	lbs/MMscf	76131
Chlorobenzene	2.78E-03	lbs/MMscf	108907
Chlorodibromomethane	1.61E-04	lbs/MMscf	124481
Chlorodifluoromethane {Freon 22}	3.51E-03	lbs/MMscf	75456
Cumene	2.64E-03	lbs/MMscf	98828
Cyclohexane	4.34E-03	lbs/MMscf	110827
Dichlorodifluoromethane {Freon 12}	7.28E-03	lbs/MMscf	75718
Ethyl benzene	3.01E-02	lbs/MMscf	100414
Ethyl chloride {Chlorethane}	1.30E-02	lbs/MMscf	75003
Ethylene dibromide {EDB}	4.60E-05	lbs/MMscf	106934
Ethylene dichloride {EDC}	8.03E-04	lbs/MMscf	107062
Formaldehyde	6.78E-03	lbs/MMscf	50000
Hexachlorobutadiene	4.64E-05	lbs/MMscf	87683
Hexane	1.62E-02	lbs/MMscf	110543
Hydrogen sulfide	5.57E-02	lbs/MMscf	7783064
Isoprene, except from vegetative emission sources	5.74E-05	lbs/MMscf	78795
Isopropyl alcohol	5.52E-03	lbs/MMscf	67630
Mercury	1.25E-06	lbs/MMscf	7439976
Methyl bromide {Bromomethane}	1.02E-04	lbs/MMscf	74839
Methyl chloride {Chloromethane}	6.29E-04	lbs/MMscf	74873
Methyl chloroform {1,1,1-TCA}	1.65E-03	lbs/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.48E-02	lbs/MMscf	78933
Methyl isobutyl ketone {Hexone}	4.51E-03	lbs/MMscf	108101
Methyl tert-butyl ether	5.31E-04	lbs/MMscf	1634044
Methylene bromide	7.41E-06	lbs/MMscf	74953
Methylene chloride {Dichloromethane}	2.67E-02	lbs/MMscf	75092
Naphthalene	8.65E-04	lbs/MMscf	91203

PAHs, total, w/o individ. components reported	5.50E-05	lbs/MMscf	1151
p-Dichlorobenzene	7.05E-03	lbs/MMscf	106467
Perchloroethylene {Tetrachloroethene}	1.72E-02	lbs/MMscf	127184
Propylene	2.99E-01	lbs/MMscf	115071
Styrene	2.18E-03	lbs/MMscf	100425
Toluene	1.53E-01	lbs/MMscf	108883
Trichloroethylene	5.55E-03	lbs/MMscf	79016
Vinyl chloride	4.53E-03	lbs/MMscf	75014
Vinylidene chloride	7.92E-04	lbs/MMscf	75354
Xylenes (mixed)	6.08E-02	lbs/MMscf	1330207

Landfill Gas Ext Comb >100 MMBtu Def

District Toxic Profile ID	236
Description	Landfill Gas Ext Comb >100 MMBtu Def
Source	Methane (Natural Gas) combustion emissions are from table, "Natural Gas Fired External Combustion Equipment" in the May 2001 report, VCAPCD AB 2588 Combustion Emission Factors. PAHs emission factor adjusted from table values to subtract Naphthalene portion. Methane content and destruction efficiency are from District defaults. Landfill gas speciation is derived from Table 2.4-1, "Default Concentrations For LFG Constituents For Landfills With Waste In Place On Or After 1992" in October 2008 AP42 Chapter 2 Solid Waste Disposal, Section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.58E-03	lbs/MMscf	79345
1,1,2-Trichloroethane	1.08E-03	lbs/MMscf	79005
1,1-Dichloroethane	1.05E-02	lbs/MMscf	75343
1,2,4-Trichlorobenzene	5.10E-05	lbs/MMscf	120821
1,2,4-Trimethylbenzene	8.40E-03	lbs/MMscf	95636
1,2-Dichloroethylene	5.64E-02	lbs/MMscf	540590
1,3-Butadiene	4.58E-04	lbs/MMscf	106990
1,4-Dioxane	3.73E-05	lbs/MMscf	123911
2,2,4-Trimethylpentane	3.58E-03	lbs/MMscf	540841
Acetaldehyde	6.69E-04	lbs/MMscf	75070
Acetonitrile	1.16E-03	lbs/MMscf	75058
Acrolein	4.40E-04	lbs/MMscf	107028
Benzene	1.05E-02	lbs/MMscf	71432
Benzyl chloride	1.17E-04	lbs/MMscf	100447
Bromodichloromethane	7.34E-05	lbs/MMscf	75274
Bromoform	1.60E-04	lbs/MMscf	75252
Carbon disulfide	5.71E-04	lbs/MMscf	75150
Carbon monoxide	3.49E-02	lbs/MMscf	630080
Carbon tetrachloride	6.26E-05	lbs/MMscf	56235
Carbonyl sulfide	3.74E-04	lbs/MMscf	463581
Chlorinated fluorocarbon {CFC-113}	6.43E-04	lbs/MMscf	76131
Chlorobenzene	2.78E-03	lbs/MMscf	108907
Chlorodibromomethane	1.61E-04	lbs/MMscf	124481
Chlorodifluoromethane {Freon 22}	3.51E-03	lbs/MMscf	75456
Cumene	2.64E-03	lbs/MMscf	98828
Cyclohexane	4.34E-03	lbs/MMscf	110827
Dichlorodifluoromethane {Freon 12}	7.28E-03	lbs/MMscf	75718
Ethyl benzene	2.74E-02	lbs/MMscf	100414
Ethyl chloride {Chlorethane}	1.30E-02	lbs/MMscf	75003
Ethylene dibromide {EDB}	4.60E-05	lbs/MMscf	106934
Ethylene dichloride {EDC}	8.03E-04	lbs/MMscf	107062
Formaldehyde	2.00E-03	lbs/MMscf	50000
Hexachlorobutadiene	4.64E-05	lbs/MMscf	87683
Hexane	1.43E-02	lbs/MMscf	110543
Hydrogen sulfide	5.57E-02	lbs/MMscf	7783064
Isoprene, except from vegetative emission sources	5.74E-05	lbs/MMscf	78795
Isopropyl alcohol	5.52E-03	lbs/MMscf	67630
Mercury	1.25E-06	lbs/MMscf	7439976
Methyl bromide {Bromomethane}	1.02E-04	lbs/MMscf	74839
Methyl chloride {Chloromethane}	6.29E-04	lbs/MMscf	74873
Methyl chloroform {1,1,1-TCA}	1.65E-03	lbs/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.48E-02	lbs/MMscf	78933
Methyl isobutyl ketone {Hexone}	4.51E-03	lbs/MMscf	108101
Methyl tert-butyl ether	5.31E-04	lbs/MMscf	1634044
Methylene bromide	7.41E-06	lbs/MMscf	74953
Methylene chloride {Dichloromethane}	2.67E-02	lbs/MMscf	75092
Naphthalene	8.65E-04	lbs/MMscf	91203

PAHs, total, w/o individ. components reported	5.50E-05	lbs/MMscf	1151
p-Dichlorobenzene	7.05E-03	lbs/MMscf	106467
Perchloroethylene {Tetrachloroethene}	1.72E-02	lbs/MMscf	127184
Propylene	1.57E-02	lbs/MMscf	115071
Styrene	2.18E-03	lbs/MMscf	100425
Toluene	1.43E-01	lbs/MMscf	108883
Trichloroethylene	5.55E-03	lbs/MMscf	79016
Vinyl chloride	4.53E-03	lbs/MMscf	75014
Vinylidene chloride	7.92E-04	lbs/MMscf	75354
Xylenes (mixed)	5.32E-02	lbs/MMscf	1330207

Landfill Gas Ext Comb Flare Default

District Toxic Profile ID	131
Description	Landfill Gas Ext Comb Flare Default
Source	Methane (Natural Gas) combustion emissions are from table, "Natural Gas Fired External Combustion Equipment" in the May 2001 report, VCAPCD AB 2588 Combustion Emission Factors. PAHs emission factor adjusted from table values to subtract Naphthalene portion. Methane content and destruction efficiency are from District defaults. Landfill gas speciation is derived from Table 2.4-1, "Default Concentrations For LFG Constituents For Landfills With Waste In Place On Or After 1992" in October 2008 AP42 Chapter 2 Solid Waste Disposal, Section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.58E-03	lb/MMscf burned	79345
1,1,2-Trichloroethane	1.08E-03	lb/MMscf burned	79005
1,1-Dichloroethane	1.05E-02	lb/MMscf burned	75343
1,2,4-Trichlorobenzene	5.10E-05	lb/MMscf burned	120821
1,2,4-Trimethylbenzene	8.40E-03	lb/MMscf burned	95636
1,2-Dichloroethylene	5.64E-02	lb/MMscf burned	540590
1,3-Butadiene	4.58E-04	lb/MMscf burned	106990
1,4-Dioxane	3.73E-05	lb/MMscf burned	123911
2,2,4-Trimethylpentane	3.58E-03	lb/MMscf burned	540841
Acetaldehyde	2.38E-02	lb/MMscf burned	75070
Acetonitrile	1.16E-03	lb/MMscf burned	75058
Acrolein	5.50E-03	lb/MMscf burned	107028
Benzene	9.70E-02	lb/MMscf burned	71432
Benzyl chloride	1.17E-04	lb/MMscf burned	100447
Bromodichloromethane	7.34E-05	lb/MMscf burned	75274
Bromoform	1.60E-04	lb/MMscf burned	75252
Carbon disulfide	5.71E-04	lb/MMscf burned	75150
Carbon monoxide	3.49E-02	lb/MMscf burned	630080
Carbon tetrachloride	6.26E-05	lb/MMscf burned	56235
Carbonyl sulfide	3.74E-04	lb/MMscf burned	463581
Chlorinated fluorocarbon {CFC-113}	6.43E-04	lb/MMscf burned	76131
Chlorobenzene	2.78E-03	lb/MMscf burned	108907
Chlorodibromomethane	1.61E-04	lb/MMscf burned	124481
Chlorodifluoromethane {Freon 22}	3.51E-03	lb/MMscf burned	75456
Cumene	2.64E-03	lb/MMscf burned	98828
Cyclohexane	4.34E-03	lb/MMscf burned	110827
Dichlorodifluoromethane {Freon 12}	7.28E-03	lb/MMscf burned	75718
Ethyl benzene	8.21E-01	lb/MMscf burned	100414
Ethyl chloride {Chlorethane}	1.30E-02	lb/MMscf burned	75003
Ethylene dibromide {EDB}	4.60E-05	lb/MMscf burned	106934
Ethylene dichloride {EDC}	8.03E-04	lb/MMscf burned	107062
Formaldehyde	6.43E-01	lb/MMscf burned	50000
Hexachlorobutadiene	4.64E-05	lb/MMscf burned	87683
Hexane	2.96E-02	lb/MMscf burned	110543
Hydrogen sulfide	5.57E-02	lb/MMscf burned	7783064
Isoprene, except from vegetative emission sources	5.74E-05	lb/MMscf burned	78795
Isopropyl alcohol	5.52E-03	lb/MMscf burned	67630
Mercury	1.25E-06	lb/MMscf burned	7439976
Methyl bromide {Bromomethane}	1.02E-04	lb/MMscf burned	74839
Methyl chloride {Chloromethane}	6.29E-04	lb/MMscf burned	74873
Methyl chloroform {1,1,1-TCA}	1.65E-03	lb/MMscf burned	71556
Methyl ethyl ketone {2-Butanone}	1.48E-02	lb/MMscf burned	78933
Methyl isobutyl ketone {Hexone}	4.51E-03	lb/MMscf burned	108101
Methyl tert-butyl ether	5.31E-04	lb/MMscf burned	1634044
Methylene bromide	7.41E-06	lb/MMscf burned	74953
Methylene chloride {Dichloromethane}	2.67E-02	lb/MMscf burned	75092
Naphthalene	6.75E-03	lb/MMscf burned	91203

PAHs, total, w/o individ. components reported	1.65E-03	lb/MMscf burned	1151
p-Dichlorobenzene	7.05E-03	lb/MMscf burned	106467
Perchloroethylene {Tetrachloroethene}	1.72E-02	lb/MMscf burned	127184
Propylene	1.35E+00	lb/MMscf burned	115071
Styrene	2.18E-03	lb/MMscf burned	100425
Toluene	1.71E-01	lb/MMscf burned	108883
Trichloroethylene	5.55E-03	lb/MMscf burned	79016
Vinyl chloride	4.53E-03	lb/MMscf burned	75014
Vinylidene chloride	7.92E-04	lb/MMscf burned	75354
Xylenes (mixed)	6.60E-02	lb/MMscf burned	1330207

LPG External Combustion- <10 MMBtu/hr

District Toxic Profile ID	102
Description	LPG External Combustion- <10 MMBtu/hr
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 report, VCAPCD AB 2588 Combustion Emission Factors and a conversion from NG to LPG using District factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.04E-04	lb/1000 gal LPG	75070
Acrolein	2.54E-04	lb/1000 gal LPG	107028
Benzene	7.52E-04	lb/1000 gal LPG	71432
Ethyl benzene	8.93E-04	lb/1000 gal LPG	100414
Formaldehyde	1.60E-03	lb/1000 gal LPG	50000
Hexane	5.92E-04	lb/1000 gal LPG	110543
Naphthalene	2.82E-05	lb/1000 gal LPG	91203
PAHs, total, w/o individ. components reported	9.40E-06	lb/1000 gal LPG	1151
Propylene	6.87E-02	lb/1000 gal LPG	115071
Toluene	3.44E-03	lb/1000 gal LPG	108883
Xylenes (mixed)	2.56E-03	lb/1000 gal LPG	1330207

LPG External Combustion- 10-100 MMBtu/hr

District Toxic Profile ID	103
Description	LPG External Combustion- 10-100 MMBtu/hr
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors and a conversion from NG to LPG using District factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	2.91E-04	lb/1000 gal LPG	75070
Acrolein	2.54E-04	lb/1000 gal LPG	107028
Benzene	5.45E-04	lb/1000 gal LPG	71432
Ethyl benzene	6.49E-04	lb/1000 gal LPG	100414
Formaldehyde	1.16E-03	lb/1000 gal LPG	50000
Hexane	4.32E-04	lb/1000 gal LPG	110543
Naphthalene	2.82E-05	lb/1000 gal LPG	91203
PAHs, total, w/o individ. components reported	9.40E-06	lb/1000 gal LPG	1151
Propylene	4.98E-02	lb/1000 gal LPG	115071
Toluene	2.49E-03	lb/1000 gal LPG	108883
Xylenes (mixed)	1.85E-03	lb/1000 gal LPG	1330207

LPG External Combustion->100 MMBtu/hr

District Toxic Profile ID	104
Description	LPG External Combustion->100 MMBtu/hr
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors and a conversion from NG to LPG using District factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	8.46E-05	lb/1000 gal LPG	75070
Acrolein	7.52E-05	lb/1000 gal LPG	107028
Benzene	1.60E-04	lb/1000 gal LPG	71432
Ethyl benzene	1.88E-04	lb/1000 gal LPG	100414
Formaldehyde	3.38E-04	lb/1000 gal LPG	50000
Hexane	1.22E-04	lb/1000 gal LPG	110543
Naphthalene	2.82E-05	lb/1000 gal LPG	91203
PAHs, total, w/o individ. components reported	9.40E-06	lb/1000 gal LPG	1151
Propylene	1.46E-03	lb/1000 gal LPG	115071
Toluene	7.33E-04	lb/1000 gal LPG	108883
Xylenes (mixed)	5.45E-04	lb/1000 gal LPG	1330207

LPG External Combustion-Flare

District Toxic Profile ID	105
Description	LPG External Combustion-Flare
Source	The emission factors were based on the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors and conversion from NG to LPG

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.04E-03	lb/1000 gal LPG	75070
Acrolein	9.40E-04	lb/1000 gal LPG	107028
Benzene	1.49E-02	lb/1000 gal LPG	71432
Ethyl benzene	1.36E-01	lb/1000 gal LPG	100414
Formaldehyde	1.10E-01	lb/1000 gal LPG	50000
Hexane	2.73E-03	lb/1000 gal LPG	110543
Naphthalene	1.03E-03	lb/1000 gal LPG	91203
PAHs, total, w/o individ. components reported	2.82E-04	lb/1000 gal LPG	1151
Propylene	2.29E-01	lb/1000 gal LPG	115071
Toluene	5.45E-03	lb/1000 gal LPG	108883
Xylenes (mixed)	2.73E-03	lb/1000 gal LPG	1330207

NG < 10 MMBTU/Hr External Combustion

District Toxic Profile ID	3
Description	NG < 10 MMBTU/Hr External Combustion
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.30E-03	lb/mmscf	75070
Acrolein	2.70E-03	lb/mmscf	107028
Benzene	8.00E-03	lb/mmscf	71432
Ethyl benzene	9.50E-03	lb/mmscf	100414
Formaldehyde	1.70E-02	lb/mmscf	50000
Hexane	6.30E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	7.31E-01	lb/mmscf	115071
Toluene	3.66E-02	lb/mmscf	108883
Xylenes (mixed)	2.72E-02	lb/mmscf	1330207

NG 10-100 MMBTU/Hr External Combustion

District Toxic Profile ID	6
Description	NG 10-100 MMBTU/Hr External Combustion
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	3.10E-03	lb/mmscf	75070
Acrolein	2.70E-03	lb/mmscf	107028
Benzene	5.80E-03	lb/mmscf	71432
Ethyl benzene	6.90E-03	lb/mmscf	100414
Formaldehyde	1.23E-02	lb/mmscf	50000
Hexane	4.60E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	5.30E-01	lb/mmscf	115071
Toluene	2.65E-02	lb/mmscf	108883
Xylenes (mixed)	1.97E-02	lb/mmscf	1330207

NG >100 MMBTU/Hr External Combustion

District Toxic Profile ID	8
Description	NG >100 MMBTU/Hr External Combustion
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	9.00E-04	lb/mmscf	75070
Acrolein	8.00E-04	lb/mmscf	107028
Benzene	1.70E-03	lb/mmscf	71432
Ethyl benzene	2.00E-03	lb/mmscf	100414
Formaldehyde	3.60E-03	lb/mmscf	50000
Hexane	1.30E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	1.55E-02	lb/mmscf	115071
Toluene	7.80E-03	lb/mmscf	108883
Xylenes (mixed)	5.80E-03	lb/mmscf	1330207

NG Flare External Combustion

District Toxic Profile ID	9
Description	NG Flare External Combustion
Source	The emission factors are from the table, "Natural Gas Fired External Combustion Equipment" in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.30E-02	lb/mmscf	75070
Acrolein	1.00E-02	lb/mmscf	107028
Benzene	1.59E-01	lb/mmscf	71432
Ethyl benzene	1.44E+00	lb/mmscf	100414
Formaldehyde	1.17E+00	lb/mmscf	50000
Hexane	2.90E-02	lb/mmscf	110543
Naphthalene	1.10E-02	lb/mmscf	91203
PAHs, total, w/o individ. components reported	3.00E-03	lb/mmscf	1151
Propylene	2.44E+00	lb/mmscf	115071
Toluene	5.80E-02	lb/mmscf	108883
Xylenes (mixed)	2.90E-02	lb/mmscf	1330207

Z1 SU Fuel Oil #6 External Combustion

District Toxic Profile ID	50
Description	Z1 SU Fuel Oil #6 External Combustion
Source	The emission factors are derived from the Chevron Bitterwater Pump Station (S1394) TEIR (1991, System ID C26427, Folder ID 2569858) source test for a Boiler (mislabeled as a Steam Generator) fueled by crude oil.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	1.08E-02	lb/1000 gal burned	106990
Acetaldehyde	1.75E-03	lb/1000 gal burned	75070
Acrolein	2.13E-03	lb/1000 gal burned	107028
Arsenic	1.29E-03	lb/1000 gal burned	7440382
Benzene	4.63E-03	lb/1000 gal burned	71432
Benzo[a]pyrene	4.80E-08	lb/1000 gal burned	50328
Benzo[b]fluoranthene	1.90E-06	lb/1000 gal burned	205992
Benzo[e]pyrene	1.08E-04	lb/1000 gal burned	192972
Benzo[k]fluoranthene	7.20E-09	lb/1000 gal burned	207089
Beryllium	5.69E-04	lb/1000 gal burned	7440417
Cadmium	7.70E-04	lb/1000 gal burned	7440439
Chloroform	4.75E-03	lb/1000 gal burned	67663
Chromium, hexavalent (& compounds)	1.27E-03	lb/1000 gal burned	18540299
Copper	3.38E-03	lb/1000 gal burned	7440508
Dibenz[a,h]anthracene	9.84E-07	lb/1000 gal burned	53703
Dioxins, total, w/o individ. isomers reported {PCDDs}	2.40E-08	lb/1000 gal burned	1086
Dioxins, total, with individ. isomers also reported {PCDDs}	2.40E-08	lb/1000 gal burned	1085
Formaldehyde	1.07E-02	lb/1000 gal burned	50000
Indeno[1,2,3-cd]pyrene	5.28E-07	lb/1000 gal burned	193395
Lead	1.43E-02	lb/1000 gal burned	7439921
Manganese	5.10E-03	lb/1000 gal burned	7439965
Mercury	9.36E-06	lb/1000 gal burned	7439976
Naphthalene	6.94E-05	lb/1000 gal burned	91203
Nickel	3.40E-07	lb/1000 gal burned	7440020
Selenium	2.57E-03	lb/1000 gal burned	7782492
Toluene	5.42E-03	lb/1000 gal burned	108883
Xylenes (mixed)	1.04E-02	lb/1000 gal burned	1330207
Zinc	1.41E-02	lb/1000 gal burned	7440666

Internal Combustion

Diesel, Distillate Oil, Fuel Oil #2-Fired Turbines

District Toxic Profile ID	155
Description	Diesel, Distillate Oil, Fuel Oil #2-Fired Turbines
Source	The emission factors were derived from the 2002 update of EPA's Stationary Combustion Turbines Emissions Database. The District uses a Diesel Heating Value of 137MMBtu/1,000 gallons.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	3.82E-03	lbs/1,000 gals	106990
Acetaldehyde	5.23E-03	lbs/1,000 gals	75070
Arsenic	3.06E-03	lbs/1,000 gals	7440382
Benzene	1.71E-02	lbs/1,000 gals	71432
Beryllium	4.21E-05	lbs/1,000 gals	7440417
Cadmium	1.02E-03	lbs/1,000 gals	7440439
Carbon tetrachloride	4.43E-03	lbs/1,000 gals	56235
Chlorobenzene	3.81E-03	lbs/1,000 gals	108907
Chloroform	3.67E-03	lbs/1,000 gals	67663
Chromium	2.04E-03	lbs/1,000 gals	7440473
Chromium, hexavalent (& compounds)	1.02E-04	lbs/1,000 gals	18540299
Ethylene dichloride {EDC}	2.79E-03	lbs/1,000 gals	107062
Formaldehyde	1.38E-01	lbs/1,000 gals	50000
Lead	3.06E-03	lbs/1,000 gals	7439921
Manganese	1.08E-01	lbs/1,000 gals	7439965
Mercury	1.64E-04	lbs/1,000 gals	7439976
Methylene chloride {Dichloromethane}	3.92E-03	lbs/1,000 gals	75092
Naphthalene	2.10E-02	lbs/1,000 gals	91203
Nickel	7.12E-03	lbs/1,000 gals	7440020
PAHs, total, w/o individ. components reported	2.15E-02	lbs/1,000 gals	1151
p-Dichlorobenzene	4.23E-03	lbs/1,000 gals	106467
Perchloroethylene {Tetrachloroethene}	4.78E-03	lbs/1,000 gals	127184
Selenium	1.02E-02	lbs/1,000 gals	7782492
Trichloroethylene	3.79E-03	lbs/1,000 gals	79016
Vinyl chloride	8.99E-03	lbs/1,000 gals	75014
Vinylidene chloride	2.79E-03	lbs/1,000 gals	75354

Diesel Engine Particulate Matter

District Toxic Profile ID	136
Description	Diesel Engine Particulate Matter
Source	Assumes all PM10 is DPM

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Diesel engine exhaust, particulate matter	1.00E+00	lb/lb PM10	9901

Gasoline-Fired Non-Catalyst ICE

District Toxic Profile ID	175
Description	Gasoline-Fired Non-Catalyst ICE
Source	The emission factors are from Table B-4 (Pg 17), "Default EF for Gasoline Combustion" in the January 2010 South Coast Air Quality Management District report, Supplemental Instructions Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory Annual Emissions Reporting Program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,4-Trimethylbenzene	1.39E+00	lbs/1,000 gallons	95636
1,3-Butadiene	9.18E-01	lbs/1,000 gallons	106990
Acetaldehyde	8.30E-01	lbs/1,000 gallons	75070
Acrolein	1.99E-01	lbs/1,000 gallons	107028
Benzene	3.81E+00	lbs/1,000 gallons	71432
Chlorine	4.55E-01	lbs/1,000 gallons	7782505
Copper	3.30E-03	lbs/1,000 gallons	7440508
Ethyl benzene	1.66E+00	lbs/1,000 gallons	100414
Formaldehyde	3.45E+00	lbs/1,000 gallons	50000
Hexane	1.45E+00	lbs/1,000 gallons	110543
Manganese	3.30E-03	lbs/1,000 gallons	7439965
Methanol	7.75E-01	lbs/1,000 gallons	67561
Methyl ethyl ketone {2-Butanone}	6.64E-02	lbs/1,000 gallons	78933
Methyl tert-butyl ether	2.06E+00	lbs/1,000 gallons	1634044
m-Xylene	4.92E+00	lbs/1,000 gallons	108383
Naphthalene	1.44E-01	lbs/1,000 gallons	91203
Nickel	3.30E-03	lbs/1,000 gallons	7440020
o-Xylene	1.71E+00	lbs/1,000 gallons	95476
Styrene	1.44E-01	lbs/1,000 gallons	100425
Toluene	7.51E+00	lbs/1,000 gallons	108883

Gasoline-Fired Portable Catalyst ICE

District Toxic Profile ID	176
Description	Gasoline-Fired Portable Catalyst ICE
Source	The emission factors are from Table B-4 (Pg 17), "Default EF for Gasoline Combustion" in the January 2010 South Coast Air Quality Management District report, Supplemental Instructions Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory Annual Emissions Reporting Program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,4-Trimethylbenzene	5.89E-01	lbs/1,000 Gallons	95636
1,3-Butadiene	3.24E-01	lbs/1,000 Gallons	106990
Acetaldehyde	1.47E-01	lbs/1,000 Gallons	75070
Acrolein	8.25E-02	lbs/1,000 Gallons	107028
Benzene	1.57E+00	lbs/1,000 Gallons	71432
Chlorine	4.55E-01	lbs/1,000 Gallons	7782505
Copper	3.30E-03	lbs/1,000 Gallons	7440508
Ethyl benzene	6.42E-01	lbs/1,000 Gallons	100414
Formaldehyde	1.01E+00	lbs/1,000 Gallons	50000
Hexane	9.42E-01	lbs/1,000 Gallons	110543
Manganese	3.30E-03	lbs/1,000 Gallons	7439965
Methanol	2.42E-01	lbs/1,000 Gallons	67561
Methyl ethyl ketone {2-Butanone}	1.18E-02	lbs/1,000 Gallons	78933
Methyl tert-butyl ether	1.15E+00	lbs/1,000 Gallons	1634044
m-Xylene	2.17E+00	lbs/1,000 Gallons	108383
Naphthalene	2.95E-02	lbs/1,000 Gallons	91203
Nickel	3.30E-03	lbs/1,000 Gallons	7440020
o-Xylene	7.54E-01	lbs/1,000 Gallons	95476
Styrene	7.07E-02	lbs/1,000 Gallons	100425
Toluene	3.50E+00	lbs/1,000 Gallons	108883

Gasoline-Fired Stationary Catalyst ICE

District Toxic Profile ID	177
Description	Gasoline-Fired Stationary Catalyst ICE
Source	The emission factors are from Table B-4 (Pg 17), "Default EF for Gasoline Combustion" in the January 2010 South Coast Air Quality Management District report, Supplemental Instructions Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory Annual Emissions Reporting Program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,4-Trimethylbenzene	5.86E-02	lbs/1,000 Gallons	95636
1,3-Butadiene	3.22E-02	lbs/1,000 Gallons	106990
Acetaldehyde	1.46E-02	lbs/1,000 Gallons	75070
Acrolein	8.20E-03	lbs/1,000 Gallons	107028
Benzene	1.56E-01	lbs/1,000 Gallons	71432
Chlorine	4.55E-01	lbs/1,000 Gallons	7782505
Copper	3.30E-03	lbs/1,000 Gallons	7440508
Ethyl benzene	6.38E-02	lbs/1,000 Gallons	100414
Formaldehyde	1.01E-01	lbs/1,000 Gallons	50000
Hexane	9.37E-02	lbs/1,000 Gallons	110543
Manganese	3.30E-03	lbs/1,000 Gallons	7439965
Methanol	2.40E-02	lbs/1,000 Gallons	67561
Methyl ethyl ketone {2-Butanone}	1.20E-03	lbs/1,000 Gallons	78933
Methyl tert-butyl ether	1.15E-01	lbs/1,000 Gallons	1634044
m-Xylene	2.16E-01	lbs/1,000 Gallons	108383
Naphthalene	2.90E-03	lbs/1,000 Gallons	91203
Nickel	3.30E-03	lbs/1,000 Gallons	7440020
o-Xylene	7.50E-02	lbs/1,000 Gallons	95476
Styrene	7.00E-03	lbs/1,000 Gallons	100425
Toluene	3.49E-01	lbs/1,000 Gallons	108883

LPG-Fired Internal Combustion 2SLB Engine No Cont

District Toxic Profile ID	154
Description	LPG-Fired Internal Combustion 2SLB Engine No Cont
Source	The emission factors are derived from July 2000 AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engine and conversion from NG to LPG using District conversion factors.. Use spreadsheet to determine VOC control or to use different HHV

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	6.23E-03	lbs/1,000 gals	79345
1,1,2-Trichloroethane	4.95E-03	lbs/1,000 gals	79005
1,1-Dichloroethane	3.68E-03	lbs/1,000 gals	75343
1,2,4-Trimethylbenzene	9.21E-04	lbs/1,000 gals	95636
1,3-Butadiene	7.71E-02	lbs/1,000 gals	106990
2,2,4-Trimethylpentane	7.95E-02	lbs/1,000 gals	540841
2-Methyl naphthalene	2.01E-03	lbs/1,000 gals	91576
Acenaphthene	1.25E-04	lbs/1,000 gals	83329
Acenaphthylene	2.98E-04	lbs/1,000 gals	208968
Acetaldehyde	7.29E-01	lbs/1,000 gals	75070
Acrolein	7.31E-01	lbs/1,000 gals	107028
Anthracene	6.75E-05	lbs/1,000 gals	120127
Benz[a]anthracene	3.16E-05	lbs/1,000 gals	56553
Benzene	1.82E-01	lbs/1,000 gals	71432
Benzo[a]pyrene	2.20E-06	lbs/1,000 gals	50328
Benzo[b]fluoranthene	8.00E-07	lbs/1,000 gals	205992
Benzo[e]pyrene	2.20E-06	lbs/1,000 gals	192972
Benzo[g,h,i]perylene	2.33E-06	lbs/1,000 gals	191242
Benzo[k]fluoranthene	4.00E-07	lbs/1,000 gals	207089
Biphenyl	3.71E-04	lbs/1,000 gals	92524
Carbon tetrachloride	5.71E-03	lbs/1,000 gals	56235
Chlorobenzene	4.17E-03	lbs/1,000 gals	108907
Chloroform	4.43E-03	lbs/1,000 gals	67663
Chrysene	6.32E-05	lbs/1,000 gals	218019
Cyclohexane	2.90E-02	lbs/1,000 gals	110827
Ethyl benzene	1.02E-02	lbs/1,000 gals	100414
Ethylene dibromide {EDB}	6.90E-03	lbs/1,000 gals	106934
Fluoranthene	3.39E-05	lbs/1,000 gals	206440
Fluorene	1.59E-04	lbs/1,000 gals	86737
Formaldehyde	5.19E+00	lbs/1,000 gals	50000
Hexane	4.18E-02	lbs/1,000 gals	110543
Indeno[1,2,3-cd]pyrene	9.33E-07	lbs/1,000 gals	193395
Methanol	2.33E-01	lbs/1,000 gals	67561
Methylene chloride {Dichloromethane}	1.38E-02	lbs/1,000 gals	75092
Naphthalene	9.05E-03	lbs/1,000 gals	91203
PAHs, total, w/o individ. components reported	1.23E-02	lbs/1,000 gals	1151
Perylene	4.67E-07	lbs/1,000 gals	198550
Phenanthrene	3.32E-04	lbs/1,000 gals	85018
Phenol	3.96E-03	lbs/1,000 gals	108952
Pyrene	5.49E-05	lbs/1,000 gals	129000
Styrene	5.15E-03	lbs/1,000 gals	100425
Toluene	9.05E-02	lbs/1,000 gals	108883
Vinyl chloride	2.32E-03	lbs/1,000 gals	75014
Xylenes (mixed)	2.52E-02	lbs/1,000 gals	1330207

LPG-Fired Internal Combustion 4SLB Engine No Cont

District Toxic Profile ID	137
Description	LPG-Fired Internal Combustion 4SLB Engine No Cont
Source	The emission factors are derived from July 2000 AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engine and conversion from NG to LPG using District conversion factors.. Use spreadsheet to determine VOC control or to use different HHV

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	3.76E-03	lb/1,000 gallons	79345
1,1,2-Trichloroethane	2.99E-03	lb/1,000 gallons	79005
1,1-Dichloroethane	2.22E-03	lb/1,000 gallons	75343
1,2,4-Trimethylbenzene	1.34E-03	lb/1,000 gallons	95636
1,3-Butadiene	2.51E-02	lb/1,000 gallons	106990
2,2,4-Trimethylpentane	2.35E-02	lb/1,000 gallons	540841
2-Methyl naphthalene	3.12E-03	lb/1,000 gallons	91576
Acenaphthene	1.18E-04	lb/1,000 gallons	83329
Acenaphthylene	5.20E-04	lb/1,000 gallons	208968
Acetaldehyde	7.86E-01	lb/1,000 gallons	75070
Acrolein	4.83E-01	lb/1,000 gallons	107028
Benzene	4.14E-02	lb/1,000 gallons	71432
Benzo[b]fluoranthene	1.56E-05	lb/1,000 gallons	205992
Benzo[e]pyrene	3.90E-05	lb/1,000 gallons	192972
Benzo[g,h,i]perylene	3.89E-05	lb/1,000 gallons	191242
Biphenyl	1.99E-02	lb/1,000 gallons	92524
Carbon tetrachloride	3.45E-03	lb/1,000 gallons	56235
Chlorobenzene	2.86E-03	lb/1,000 gallons	108907
Chloroform	2.68E-03	lb/1,000 gallons	67663
Chrysene	6.51E-05	lb/1,000 gallons	218019
Ethyl benzene	3.73E-03	lb/1,000 gallons	100414
Ethylene dibromide {EDB}	4.16E-03	lb/1,000 gallons	106934
Fluoranthene	1.04E-04	lb/1,000 gallons	206440
Fluorene	5.33E-04	lb/1,000 gallons	86737
Formaldehyde	4.96E+00	lb/1,000 gallons	50000
Hexane	1.04E-01	lb/1,000 gallons	110543
Methanol	2.35E-01	lb/1,000 gallons	67561
Methylene chloride {Dichloromethane}	1.88E-03	lb/1,000 gallons	75092
Naphthalene	6.99E-03	lb/1,000 gallons	91203
PAHs, total, w/o individ. components reported	2.53E-03	lb/1,000 gallons	1151
Phenanthrene	9.78E-04	lb/1,000 gallons	85018
Phenol	2.26E-03	lb/1,000 gallons	108952
Pyrene	1.28E-04	lb/1,000 gallons	129000
Styrene	2.22E-03	lb/1,000 gallons	100425
Toluene	3.84E-02	lb/1,000 gallons	108883
Vinyl chloride	1.40E-03	lb/1,000 gallons	75014
Xylenes (mixed)	1.73E-02	lb/1,000 gallons	1330207

LPG-Fired Internal Combustion 4SRB Engine No Cont

District Toxic Profile ID	156
Description	LPG-Fired Internal Combustion 4SRB Engine No Cont
Source	The emission factors are derived from July 2000 AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engine and conversion from NG to LPG using District conversion factors. Use spreadsheet to determine VOC control or to use different HHV.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	2.38E-03	lbs/1,000 gals	79345
1,1,2-Trichloroethane	1.44E-03	lbs/1,000 gals	79005
1,1-Dichloroethane	1.06E-03	lbs/1,000 gals	75343
1,3-Butadiene	6.23E-02	lbs/1,000 gals	106990
Acetaldehyde	2.62E-01	lbs/1,000 gals	75070
Acrolein	2.47E-01	lbs/1,000 gals	107028
Benzene	1.49E-01	lbs/1,000 gals	71432
Carbon tetrachloride	1.66E-03	lbs/1,000 gals	56235
Chlorobenzene	1.21E-03	lbs/1,000 gals	108907
Chloroform	1.29E-03	lbs/1,000 gals	67663
Ethyl benzene	2.33E-03	lbs/1,000 gals	100414
Ethylene dibromide {EDB}	2.00E-03	lbs/1,000 gals	106934
Formaldehyde	1.93E+00	lbs/1,000 gals	50000
Methanol	2.88E-01	lbs/1,000 gals	67561
Methylene chloride {Dichloromethane}	3.87E-03	lbs/1,000 gals	75092
Naphthalene	9.13E-03	lbs/1,000 gals	91203
PAHs, total, w/o individ. components reported	1.33E-02	lbs/1,000 gals	1151
Styrene	1.12E-03	lbs/1,000 gals	100425
Toluene	5.25E-02	lbs/1,000 gals	108883
Vinyl chloride	6.75E-04	lbs/1,000 gals	75014
Xylenes (mixed)	1.83E-02	lbs/1,000 gals	1330207

LPG Internal Combustion - Turbine w/o Catalyst

District Toxic Profile ID	108
Description	LPG Internal Combustion - Turbine w/o Catalyst
Source	LPG-fired turbine toxic emission are not available, so natural gas-fired turbine emission factors are used as a surrogate.The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3: Stationary Gas Turbines, Table 3.1-3. Assumes 94,000 Btu/gal LPG

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	4.04E-05	lb/1000 gal LPG	106990
Acetaldehyde	3.76E-03	lb/1000 gal LPG	75070
Acrolein	6.02E-04	lb/1000 gal LPG	107028
Benzene	1.13E-03	lb/1000 gal LPG	71432
Ethyl benzene	3.01E-03	lb/1000 gal LPG	100414
Formaldehyde	6.67E-02	lb/1000 gal LPG	50000
Naphthalene	1.22E-04	lb/1000 gal LPG	91203
PAHs, total, with individ. components also reported	2.07E-04	lb/1000 gal LPG	1150
Propylene oxide	2.73E-03	lb/1000 gal LPG	75569
Toluene	1.22E-02	lb/1000 gal LPG	108883
Xylenes (mixed)	6.02E-03	lb/1000 gal LPG	1330207

LPG Internal Combustion - Turbine w/ Catalyst

District Toxic Profile ID	158
Description	LPG Internal Combustion - Turbine w/ Catalyst
Source	LPG-fired turbine toxic emission are not available, so natural gas-fired turbine emission factors are used as a surrogate.The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3: Stationary Gas Turbines, Table 3.1-3. Assumes 94,000 Btu/gal LPG

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	4.04E-05	lb/1,000 Gallons	106990
Acetaldehyde	3.76E-03	lb/1,000 Gallons	75070
Acrolein	6.02E-04	lb/1,000 Gallons	107028
Benzene	8.55E-05	lb/1,000 Gallons	71432
Ethyl benzene	3.01E-03	lb/1,000 Gallons	100414
Formaldehyde	1.88E-03	lb/1,000 Gallons	50000
Naphthalene	1.22E-04	lb/1,000 Gallons	91203
PAHs, total, with individ. components also reported	2.07E-04	lb/1,000 Gallons	1150
Propylene oxide	2.73E-03	lb/1,000 Gallons	75569
Toluene	1.22E-02	lb/1,000 Gallons	108883
Xylenes (mixed)	6.02E-03	lb/1,000 Gallons	1330207

NG Internal Combustion 2SLB Engine No Controls

District Toxic Profile ID	159
Description	NG Internal Combustion 2SLB Engine No Controls
Source	The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engines, Table 3.2-1. Assumes 1,000 btu per scf natural gas. Use spreadsheet to determine VOC control or to use different HHV

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	6.63E-02	lb/MMscf	79345
1,1,2-Trichloroethane	5.27E-02	lb/MMscf	79005
1,1-Dichloroethane	3.91E-02	lb/MMscf	75343
1,2,4-Trimethylbenzene	9.80E-03	lb/MMscf	95636
1,3-Butadiene	8.20E-01	lb/MMscf	106990
2,2,4-Trimethylpentane	8.46E-01	lb/MMscf	540841
2-Methyl naphthalene	2.14E-02	lb/MMscf	91576
Acenaphthene	1.33E-03	lb/MMscf	83329
Acenaphthylene	3.17E-03	lb/MMscf	208968
Acetaldehyde	7.76E+00	lb/MMscf	75070
Acrolein	7.78E+00	lb/MMscf	107028
Anthracene	7.18E-04	lb/MMscf	120127
Benz[a]anthracene	3.36E-04	lb/MMscf	56553
Benzene	1.94E+00	lb/MMscf	71432
Benzo[a]pyrene	5.68E-06	lb/MMscf	50328
Benzo[b]fluoranthene	8.51E-06	lb/MMscf	205992
Benzo[e]pyrene	2.34E-05	lb/MMscf	192972
Benzo[g,h,i]perylene	2.48E-05	lb/MMscf	191242
Benzo[k]fluoranthene	4.26E-06	lb/MMscf	207089
Biphenyl	3.95E-03	lb/MMscf	92524
Carbon tetrachloride	6.07E-02	lb/MMscf	56235
Chlorobenzene	4.44E-02	lb/MMscf	108907
Chloroform	4.71E-02	lb/MMscf	67663
Chrysene	6.72E-04	lb/MMscf	218019
Cyclohexane	3.08E-01	lb/MMscf	110827
Ethyl benzene	1.08E-01	lb/MMscf	100414
Ethylene dibromide {EDB}	7.34E-02	lb/MMscf	106934
Ethylene dichloride {EDC}	4.22E-02	lb/MMscf	107062
Fluoranthene	3.61E-04	lb/MMscf	206440
Fluorene	1.69E-03	lb/MMscf	86737
Formaldehyde	5.52E+01	lb/MMscf	50000
Hexane	4.45E-01	lb/MMscf	110543
Indeno[1,2,3-cd]pyrene	9.93E-06	lb/MMscf	193395
Methanol	2.48E+00	lb/MMscf	67561
Methylene chloride {Dichloromethane}	1.47E-01	lb/MMscf	75092
Naphthalene	9.63E-02	lb/MMscf	91203
PAHs, total, w/o individ. components reported	3.47E-02	lb/MMscf	1151
Perylene	4.97E-06	lb/MMscf	198550
Phenanthrene	3.53E-03	lb/MMscf	85018
Phenol	4.21E-02	lb/MMscf	108952
Pyrene	5.84E-04	lb/MMscf	129000
Styrene	5.48E-02	lb/MMscf	100425
Toluene	9.63E-01	lb/MMscf	108883
Vinyl chloride	2.47E-02	lb/MMscf	75014
Xylenes (mixed)	2.68E-01	lb/MMscf	1330207

NG Internal Combustion 4SLB Engine No Controls

District Toxic Profile ID	160
Description	NG Internal Combustion 4SLB Engine No Controls
Source	The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engines, Table 3.2-2. Assumes 1,000 Btu per scf natural gas. Use spreadsheet to determine VOC control or to use different HHV

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.00E-02	lb/MMscf	79345
1,1,2-Trichloroethane	3.18E-02	lb/MMscf	79005
1,1-Dichloroethane	2.36E-02	lb/MMscf	75343
1,2,4-Trimethylbenzene	1.43E-02	lb/MMscf	95636
1,3-Butadiene	2.67E-01	lb/MMscf	106990
2,2,4-Trimethylpentane	2.50E-01	lb/MMscf	540841
2-Methyl naphthalene	3.32E-02	lb/MMscf	91576
Acenaphthene	1.25E-03	lb/MMscf	83329
Acenaphthylene	5.53E-03	lb/MMscf	208968
Acetaldehyde	8.36E+00	lb/MMscf	75070
Acrolein	5.14E+00	lb/MMscf	107028
Benzene	4.40E-01	lb/MMscf	71432
Benzo[b]fluoranthene	1.66E-04	lb/MMscf	205992
Benzo[e]pyrene	4.15E-04	lb/MMscf	192972
Benzo[g,h,i]perylene	4.14E-04	lb/MMscf	191242
Biphenyl	2.12E-01	lb/MMscf	92524
Carbon tetrachloride	3.67E-02	lb/MMscf	56235
Chlorobenzene	3.04E-02	lb/MMscf	108907
Chloroform	2.85E-02	lb/MMscf	67663
Chrysene	6.93E-04	lb/MMscf	218019
Ethyl benzene	3.97E-02	lb/MMscf	100414
Ethylene dibromide {EDB}	4.43E-02	lb/MMscf	106934
Ethylene dichloride {EDC}	2.36E-02	lb/MMscf	107062
Fluoranthene	1.11E-03	lb/MMscf	206440
Fluorene	5.67E-03	lb/MMscf	86737
Formaldehyde	5.28E+01	lb/MMscf	50000
Hexane	1.11E+00	lb/MMscf	110543
Methanol	2.50E+00	lb/MMscf	67561
Methylene chloride {Dichloromethane}	2.00E-02	lb/MMscf	75092
Naphthalene	7.44E-02	lb/MMscf	91203
PAHs, total, w/o individ. components reported	7.75E-03	lb/MMscf	1151
Phenanthrene	1.04E-02	lb/MMscf	85018
Phenol	2.40E-02	lb/MMscf	108952
Pyrene	1.36E-03	lb/MMscf	129000
Styrene	2.36E-02	lb/MMscf	100425
Toluene	4.08E-01	lb/MMscf	108883
Vinyl chloride	1.49E-02	lb/MMscf	75014
Xylenes (mixed)	1.84E-01	lb/MMscf	1330207

NG Internal Combustion 4SRB Engine No Controls

District Toxic Profile ID	161
Description	NG Internal Combustion 4SRB Engine No Controls
Source	The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engines, Table 3.2-3. Assumes 1,000 Btu's per scf natural gas. Use spreadsheet to determine VOC control or to use different HHV

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	2.53E-02	lbs/MMscf	79345
1,1,2-Trichloroethane	1.53E-02	lbs/MMscf	79005
1,1-Dichloroethane	1.13E-02	lbs/MMscf	75343
1,3-Butadiene	6.63E-01	lbs/MMscf	106990
Acetaldehyde	2.79E+00	lbs/MMscf	75070
Acrolein	2.63E+00	lbs/MMscf	107028
Benzene	1.58E+00	lbs/MMscf	71432
Carbon tetrachloride	1.77E-02	lbs/MMscf	56235
Chlorobenzene	1.29E-02	lbs/MMscf	108907
Chloroform	1.37E-02	lbs/MMscf	67663
Ethyl benzene	2.48E-02	lbs/MMscf	100414
Ethylene dibromide {EDB}	2.13E-02	lbs/MMscf	106934
Ethylene dichloride {EDC}	1.13E-02	lbs/MMscf	107062
Formaldehyde	2.05E+01	lbs/MMscf	50000
Methanol	3.06E+00	lbs/MMscf	67561
Methylene chloride {Dichloromethane}	4.12E-02	lbs/MMscf	75092
Naphthalene	9.71E-02	lbs/MMscf	91203
PAHs, total, w/o individ. components reported	4.39E-02	lbs/MMscf	1151
Styrene	1.19E-02	lbs/MMscf	100425
Toluene	5.58E-01	lbs/MMscf	108883
Vinyl chloride	7.18E-03	lbs/MMscf	75014
Xylenes (mixed)	1.95E-01	lbs/MMscf	1330207

NG Internal Combustion 4SLB Engine CAT RED

District Toxic Profile ID	239
Description	NG Internal Combustion 4SLB Engine CAT RED
Source	The emission factors derived from Table 3.2-2 (pg. 11), "Uncontrolled Emission Factors For 4-Stroke Lean-Burn Engines" in July 2000 AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engine. Assumes 1,000 Btu per scf natural gas 76% TAC reduction applied by use of catalyst

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	9.60E-03	lb/MMscf	79345
1,1,2-Trichloroethane	7.63E-03	lb/MMscf	79005
1,1-Dichloroethane	5.66E-03	lb/MMscf	75343
1,2,4-Trimethylbenzene	3.43E-03	lb/MMscf	95636
1,3-Butadiene	6.41E-02	lb/MMscf	106990
2,2,4-Trimethylpentane	6.00E-02	lb/MMscf	540841
2-Methyl naphthalene	7.97E-03	lb/MMscf	91576
Acenaphthene	3.00E-04	lb/MMscf	83329
Acenaphthylene	1.33E-03	lb/MMscf	208968
Acetaldehyde	2.01E+00	lb/MMscf	75070
Acrolein	1.23E+00	lb/MMscf	107028
Benzene	1.06E-01	lb/MMscf	71432
Benzo[b]fluoranthene	3.98E-05	lb/MMscf	205992
Benzo[e]pyrene	9.96E-05	lb/MMscf	192972
Benzo[g,h,i]perylene	9.94E-05	lb/MMscf	191242
Biphenyl	5.09E-02	lb/MMscf	92524
Carbon tetrachloride	8.81E-03	lb/MMscf	56235
Chlorobenzene	7.30E-03	lb/MMscf	108907
Chloroform	6.84E-03	lb/MMscf	67663
Chrysene	1.66E-04	lb/MMscf	218019
Ethyl benzene	9.53E-03	lb/MMscf	100414
Ethylene dibromide {EDB}	1.06E-02	lb/MMscf	106934
Ethylene dichloride {EDC}	5.66E-03	lb/MMscf	107062
Fluoranthene	2.66E-04	lb/MMscf	206440
Fluorene	1.36E-03	lb/MMscf	86737
Formaldehyde	1.27E+01	lb/MMscf	50000
Hexane	2.66E-01	lb/MMscf	110543
Methanol	6.00E-01	lb/MMscf	67561
Methylene chloride {Dichloromethane}	4.80E-03	lb/MMscf	75092
Naphthalene	1.79E-02	lb/MMscf	91203
PAHs, total, w/o individ. components reported	1.86E-03	lb/MMscf	1151
Phenanthrene	2.50E-03	lb/MMscf	85018
Phenol	5.76E-03	lb/MMscf	108952
Pyrene	3.26E-04	lb/MMscf	129000
Styrene	5.66E-03	lb/MMscf	100425
Toluene	9.79E-02	lb/MMscf	108883
Vinyl chloride	3.58E-03	lb/MMscf	75014
Xylenes (mixed)	4.42E-02	lb/MMscf	1330207

NG Internal Combustion 4SRB Engine CAT RED

District Toxic Profile ID	240
Description	NG Internal Combustion 4SRB Engine CAT RED
Source	The emission factors derived from Table 3.2-3 (pg. 15), "Uncontrolled Emission Factors For 4-Stroke Rich-Burn Engines" in July 2000 AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 2: Natural Gas-Fired Reciprocating Engine. Assumes 1,000 Btu's per scf natural gas. 76% TAC reduction applies by use of catalyst

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	6.07E-03	lb/MMscf	79345
1,1,2-Trichloroethane	3.67E-03	lb/MMscf	79005
1,1-Dichloroethane	2.71E-03	lb/MMscf	75343
1,3-Butadiene	1.59E-01	lb/MMscf	106990
Acetaldehyde	6.70E-01	lb/MMscf	75070
Acrolein	6.31E-01	lb/MMscf	107028
Benzene	3.79E-01	lb/MMscf	71432
Carbon tetrachloride	4.25E-03	lb/MMscf	56235
Chlorobenzene	3.10E-03	lb/MMscf	108907
Chloroform	3.29E-03	lb/MMscf	67663
Ethyl benzene	5.95E-03	lb/MMscf	100414
Ethylene dibromide {EDB}	5.11E-03	lb/MMscf	106934
Ethylene dichloride {EDC}	2.71E-03	lb/MMscf	107062
Formaldehyde	4.92E+00	lb/MMscf	50000
Methanol	7.34E-01	lb/MMscf	67561
Methylene chloride {Dichloromethane}	9.89E-03	lb/MMscf	75092
Naphthalene	2.33E-02	lb/MMscf	91203
PAHs, total, w/o individ. components reported	1.05E-02	lb/MMscf	1151
Styrene	2.86E-03	lb/MMscf	100425
Toluene	1.34E-01	lb/MMscf	108883
Vinyl chloride	1.72E-03	lb/MMscf	75014
Xylenes (mixed)	4.68E-02	lb/MMscf	1330207

NG Internal Combustion - Turbine w/o Catalyst

District Toxic Profile ID	162
Description	NG Internal Combustion - Turbine w/o Catalyst
Source	The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3: Stationary Gas Turbines, Table 3.1-3. Assumes 1,000 Btu's per scf natural gas.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	4.30E-04	lb/MMscf	106990
Acetaldehyde	4.00E-02	lb/MMscf	75070
Acrolein	6.40E-03	lb/MMscf	107028
Benzene	1.20E-02	lb/MMscf	71432
Ethyl benzene	3.20E-02	lb/MMscf	100414
Formaldehyde	7.10E-01	lb/MMscf	50000
Naphthalene	1.30E-03	lb/MMscf	91203
PAHs, total, with individ. components also reported	2.20E-03	lb/MMscf	1150
Propylene oxide	2.90E-02	lb/MMscf	75569
Toluene	1.30E-01	lb/MMscf	108883
Xylenes (mixed)	6.40E-02	lb/MMscf	1330207

NG Internal Combustion - Turbine w/ Catalyst

District Toxic Profile ID	163
Description	NG Internal Combustion - Turbine w/ Catalyst
Source	The emission factors were based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3: Stationary Gas Turbines, Table 3.1-3. Assumes 1,000 Btu's per scf natural gas.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	4.30E-04	lbs/MMscf	106990
Acetaldehyde	4.00E-02	lbs/MMscf	75070
Acrolein	6.40E-03	lbs/MMscf	107028
Benzene	9.10E-04	lbs/MMscf	71432
Ethyl benzene	3.20E-02	lbs/MMscf	100414
Formaldehyde	2.00E-02	lbs/MMscf	50000
Naphthalene	1.30E-03	lbs/MMscf	91203
PAHs, total, with individ. components also reported	2.20E-03	lbs/MMscf	1150
Propylene oxide	2.90E-02	lbs/MMscf	75569
Toluene	1.30E-01	lbs/MMscf	108883
Xylenes (mixed)	6.40E-02	lbs/MMscf	1330207

Z1 SU Digester Gas ICE (Farm Waste, Not Dairy)

District Toxic Profile ID	49
Description	Z1 SU Digester Gas ICE (Farm Waste, Not Dairy)
Source	The emission factors are derived from the 2002 Reciprocating Internal Combustion Engine (RICE) EPA database (see Alpha-Gamma Technologies Memo for digester gas emission factor tables). The District uses a heating value of 600 btu/scf for digester gas.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	2.43E-02	lb/MMscf burned	106990
1,4-Dioxane	8.70E-03	lb/MMscf burned	123911
Acetaldehyde	6.24E-02	lb/MMscf burned	75070
Acrolein	1.42E-02	lb/MMscf burned	107028
Benzene	1.70E+00	lb/MMscf burned	71432
Carbon tetrachloride	4.44E-03	lb/MMscf burned	56235
Chloroform	8.82E-03	lb/MMscf burned	67663
Ethylene dibromide {EDB}	4.36E-03	lb/MMscf burned	106934
Ethylene dichloride {EDC}	4.42E-03	lb/MMscf burned	107062
Formaldehyde	1.80E+00	lb/MMscf burned	50000
Methyl chloroform {1,1,1-TCA}	8.88E-03	lb/MMscf burned	71556
Methylene chloride {Dichloromethane}	8.76E-02	lb/MMscf burned	75092
p-Dichlorobenzene	4.28E-02	lb/MMscf burned	106467
Perchloroethylene {Tetrachloroethene}	9.00E-03	lb/MMscf burned	127184
Styrene	3.31E-02	lb/MMscf burned	100425
Toluene	7.44E-01	lb/MMscf burned	108883
Trichloroethylene	8.76E-03	lb/MMscf burned	79016
Vinyl chloride	1.14E-02	lb/MMscf burned	75014
Vinylidene chloride	4.51E-03	lb/MMscf burned	75354
Xylenes (mixed)	1.60E-01	lb/MMscf burned	1330207

Z1 SU Digester Gas Turbine (Farm Waste and WW)

District Toxic Profile ID	130
Description	Z1 SU Digester Gas Turbine(Farm Waste and WW)
Source	The emission factors are from table 3.1.7 and 3.1.8 (pg. 17,18) in April 2000 AP42 3.1 Stationary Gas Turbines. The District uses a Digester Gas Heating Value of 600 Btu/scf.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	5.88E-03	lb/MMscf burned	106990
Acetaldehyde	3.18E-02	lb/MMscf burned	75070
Arsenic	1.38E-03	lb/MMscf burned	7440382
Cadmium	3.48E-04	lb/MMscf burned	7440439
Carbon tetrachloride	1.20E-02	lb/MMscf burned	56235
Chlorobenzene	9.60E-03	lb/MMscf burned	108907
Chloroform	1.02E-02	lb/MMscf burned	67663
Chromium	7.20E-04	lb/MMscf burned	7440473
Chromium, hexavalent (& compounds)	3.60E-05	lb/MMscf burned	18540299
Ethylene dichloride {EDC}	9.00E-03	lb/MMscf burned	107062
Formaldehyde	1.14E-01	lb/MMscf burned	50000
Lead	2.04E-03	lb/MMscf burned	7439921
Methylene chloride {Dichloromethane}	7.80E-03	lb/MMscf burned	75092
Nickel	1.20E-03	lb/MMscf burned	7440020
p-Dichlorobenzene	1.20E-02	lb/MMscf burned	106467
Perchloroethylene {Tetrachloroethene}	1.26E-02	lb/MMscf burned	127184
Selenium	6.60E-03	lb/MMscf burned	7782492
Trichloroethylene	1.08E-02	lb/MMscf burned	79016
Vinyl chloride	2.16E-02	lb/MMscf burned	75014
Vinylidene chloride	9.00E-03	lb/MMscf burned	75354

Mineral

Aggregate Batch Plant

District Toxic Profile ID	39
Description	Aggregate Batch Plant
Source	The emission factors are from the table, "DEFAULT VALUES - TRACE METAL CONCENTRATIONS" in the November 1998 San Diego Air Pollution Control District document, Aggregate Crushing Operations.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.50E-02	lb/lb PM10	7429905
Arsenic	2.20E-05	lb/lb PM10	7440382
Barium	2.25E-04	lb/lb PM10	7440393
Beryllium	1.00E-06	lb/lb PM10	7440417
Cadmium	1.00E-06	lb/lb PM10	7440439
Chromium	2.80E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.40E-06	lb/lb PM10	18540299
Cobalt	1.10E-05	lb/lb PM10	7440484
Copper	3.70E-05	lb/lb PM10	7440508
Lead	5.00E-05	lb/lb PM10	7439921
Manganese	5.30E-04	lb/lb PM10	7439965
Nickel	2.80E-05	lb/lb PM10	7440020
Selenium	1.00E-06	lb/lb PM10	7782492
Silica, crystalline	6.38E-02	lb/lb PM 10	1175
Zinc	9.90E-05	lb/lb PM10	7440666

Aggregate Piles

District Toxic Profile ID	207
Description	Aggregate Piles
Source	The emission factors are from the table, "DEFAULT VALUES - Material Storage" in the December 1998 San Diego Air Pollution Control District document, Open Material Storage Areas.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Arsenic	2.00E-05	lb/lb PM10	7440382
Beryllium	1.00E-06	lb/lb PM10	7440417
Cadmium	1.00E-06	lb/lb PM10	7440439
Chromium	5.00E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.50E-06	lb/lb PM10	18540299
Copper	1.00E-04	lb/lb PM10	7440508
Lead	5.00E-05	lb/lb PM10	7439921
Manganese	5.00E-04	lb/lb PM10	7439965
Nickel	2.00E-05	lb/lb PM10	7440020
Selenium	5.00E-06	lb/lb PM10	7782492
Zinc	2.00E-04	lb/lb PM10	7440666

Asphalt Batch Plant Batch Mix HM NG or #2 Fuel Oil

District Toxic Profile ID	167
Description	Asphalt Batch Plant Batch Mix HM NG or #2 Fuel Oil
Source	Emission factors are from tables 11.1-9 (pg. 19) and 11.1-11 (pg. 29) in March 2004 AP 42 Chapter 11 Mineral Products Industry, Section 1 Hot Mix Asphalt Plants.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
2-Methyl naphthalene	7.10E-05	lbs/ton asphalt produced	91576
Acenaphthene	9.00E-07	lbs/ton asphalt produced	83329
Acenaphthylene	5.80E-07	lbs/ton asphalt produced	208968
Acetaldehyde	3.20E-04	lbs/ton asphalt produced	75070
Anthracene	2.10E-07	lbs/ton asphalt produced	120127
Arsenic	4.60E-07	lbs/ton asphalt produced	7440382
Barium	1.50E-06	lbs/ton asphalt produced	7440393
Benz[a]anthracene	4.60E-09	lbs/ton asphalt produced	56553
Benzene	2.80E-04	lbs/ton asphalt produced	71432
Benzo[a]pyrene	3.10E-10	lbs/ton asphalt produced	50328
Benzo[b]fluoranthene	9.40E-09	lbs/ton asphalt produced	205992
Benzo[g,h,i]perylene	5.00E-10	lbs/ton asphalt produced	191242
Benzo[k]fluoranthene	1.30E-08	lbs/ton asphalt produced	207089
Beryllium	1.50E-07	lbs/ton asphalt produced	7440417
Cadmium	6.10E-07	lbs/ton asphalt produced	7440439
Chromium	5.70E-07	lbs/ton asphalt produced	7440473
Chromium, hexavalent (& compounds)	4.80E-08	lbs/ton asphalt produced	18540299
Chrysene	3.80E-09	lbs/ton asphalt produced	218019
Copper	2.80E-06	lbs/ton asphalt produced	7440508
Crotonaldehyde	2.90E-05	lbs/ton asphalt produced	4170303
Dibenz[a,h]anthracene	9.50E-11	lbs/ton asphalt produced	53703
Ethyl benzene	2.20E-03	lbs/ton asphalt produced	100414
Fluoranthene	1.60E-07	lbs/ton asphalt produced	206440
Fluorene	1.60E-06	lbs/ton asphalt produced	86737
Formaldehyde	7.40E-04	lbs/ton asphalt produced	50000
Indeno[1,2,3-cd]pyrene	3.00E-10	lbs/ton asphalt produced	193395
Isobutyraldehyde	3.00E-05	lbs/ton asphalt produced	78842
Lead	8.90E-07	lbs/ton asphalt produced	7439921
Manganese	6.90E-06	lbs/ton asphalt produced	7439965
Mercury	4.10E-07	lbs/ton asphalt produced	7439976
Naphthalene	3.60E-05	lbs/ton asphalt produced	91203
Nickel	3.00E-06	lbs/ton asphalt produced	7440020
Phenanthrene	2.60E-06	lbs/ton asphalt produced	85018
Pyrene	6.20E-08	lbs/ton asphalt produced	129000
Quinone	2.70E-04	lbs/ton asphalt produced	106514
Selenium	4.90E-07	lbs/ton asphalt produced	7782492
Toluene	1.00E-03	lbs/ton asphalt produced	108883
Xylenes (mixed)	2.70E-03	lbs/ton asphalt produced	1330207
Zinc	6.80E-06	lbs/ton asphalt produced	7440666

Asphalt Batch Plant Batch Mix HM Oil Fired

District Toxic Profile ID	168
Description	Asphalt Batch Plant Batch Mix HM Oil Fired
Source	Emission factors are from tables 11.1-9 (pg. 19) and 11.1-11 (pg. 29) in March 2004 AP 42 Chapter 11 Mineral Products Industry, Section 1 Hot Mix Asphalt Plants.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
2-Methyl naphthalene	7.10E-05	lbs/ton asphalt produced	91576
Acenaphthene	9.00E-07	lbs/ton asphalt produced	83329
Acenaphthylene	5.80E-07	lbs/ton asphalt produced	208968
Acetaldehyde	3.20E-04	lbs/ton asphalt produced	75070
Anthracene	2.10E-07	lbs/ton asphalt produced	120127
Arsenic	4.60E-07	lbs/ton asphalt produced	7440382
Barium	1.50E-06	lbs/ton asphalt produced	7440393
Benz[a]anthracene	4.60E-09	lbs/ton asphalt produced	56553
Benzene	2.80E-04	lbs/ton asphalt produced	71432
Benzo[a]pyrene	3.10E-10	lbs/ton asphalt produced	50328
Benzo[b]fluoranthene	9.40E-09	lbs/ton asphalt produced	205992
Benzo[g,h,i]perylene	5.00E-10	lbs/ton asphalt produced	191242
Benzo[k]fluoranthene	1.30E-08	lbs/ton asphalt produced	207089
Beryllium	1.50E-07	lbs/ton asphalt produced	7440417
Cadmium	6.10E-07	lbs/ton asphalt produced	7440439
Chromium	5.70E-07	lbs/ton asphalt produced	7440473
Chromium, hexavalent (& compounds)	4.80E-08	lbs/ton asphalt produced	18540299
Chrysene	3.80E-09	lbs/ton asphalt produced	218019
Copper	2.80E-06	lbs/ton asphalt produced	7440508
Crotonaldehyde	2.90E-05	lbs/ton asphalt produced	4170303
Dibenz[a,h]anthracene	9.50E-11	lbs/ton asphalt produced	53703
Ethyl benzene	2.20E-03	lbs/ton asphalt produced	100414
Fluoranthene	2.40E-05	lbs/ton asphalt produced	206440
Fluorene	1.60E-06	lbs/ton asphalt produced	86737
Formaldehyde	7.40E-04	lbs/ton asphalt produced	50000
Indeno[1,2,3-cd]pyrene	3.00E-10	lbs/ton asphalt produced	193395
Isobutyraldehyde	3.00E-05	lbs/ton asphalt produced	78842
Lead	8.90E-07	lbs/ton asphalt produced	7439921
Manganese	6.90E-06	lbs/ton asphalt produced	7439965
Mercury	4.10E-07	lbs/ton asphalt produced	7439976
Naphthalene	3.60E-05	lbs/ton asphalt produced	91203
Nickel	3.00E-06	lbs/ton asphalt produced	7440020
Phenanthrene	3.70E-05	lbs/ton asphalt produced	85018
Pyrene	5.50E-05	lbs/ton asphalt produced	129000
Quinone	2.70E-04	lbs/ton asphalt produced	106514
Selenium	4.90E-07	lbs/ton asphalt produced	7782492
Toluene	1.00E-03	lbs/ton asphalt produced	108883
Xylenes (mixed)	2.70E-03	lbs/ton asphalt produced	1330207
Zinc	6.80E-06	lbs/ton asphalt produced	7440666

Asphalt Batch Plant Drum Mix HM Fuel Oil

District Toxic Profile ID	170
Description	Asphalt Batch Plant Drum Mix HM Fuel Oil
Source	Emission factors are from tables 11.1-10 (pg. 21) and 11.1-12 (pg. 30) in March 2004 AP 42 Chapter 11 Mineral Products Industry, Section 1 Hot Mix Asphalt Plants.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,3,4,5,6,7,8-Octachlorodibenzofuran	4.80E-12	lbs/ton asphalt produced	39001020
1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin	2.50E-11	lbs/ton asphalt produced	3268879
1,2,3,4,6,7,8-Heptachlorodibenzofuran	6.50E-12	lbs/ton asphalt produced	67562394
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	4.80E-12	lbs/ton asphalt produced	35822469
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.70E-12	lbs/ton asphalt produced	55673897
1,2,3,4,7,8-Hexachlorodibenzofuran	4.00E-12	lbs/ton asphalt produced	70648269
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	4.20E-13	lbs/ton asphalt produced	39227286
1,2,3,6,7,8-Hexachlorodibenzofuran	1.20E-12	lbs/ton asphalt produced	57117449
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.30E-12	lbs/ton asphalt produced	57653857
1,2,3,7,8,9-Hexachlorodibenzofuran	8.40E-12	lbs/ton asphalt produced	72918219
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	9.80E-13	lbs/ton asphalt produced	19408743
1,2,3,7,8-Pentachlorodibenzofuran	4.30E-12	lbs/ton asphalt produced	57117416
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.10E-13	lbs/ton asphalt produced	40321764
2,2,4-Trimethylpentane	4.00E-05	lbs/ton asphalt produced	540841
2,3,4,6,7,8-Hexachlorodibenzofuran	1.90E-12	lbs/ton asphalt produced	60851345
2,3,4,7,8-Pentachlorodibenzofuran	8.40E-13	lbs/ton asphalt produced	57117314
2,3,7,8-Tetrachlorodibenzofuran	9.70E-13	lbs/ton asphalt produced	51207319
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.10E-13	lbs/ton asphalt produced	1746016
2-Methyl naphthalene	1.70E-04	lbs/ton asphalt produced	91576
Acenaphthene	1.40E-06	lbs/ton asphalt produced	83329
Acenaphthylene	2.20E-05	lbs/ton asphalt produced	208968
Anthracene	3.10E-06	lbs/ton asphalt produced	120127
Antimony	1.80E-07	lbs/ton asphalt produced	7440360
Arsenic	5.60E-07	lbs/ton asphalt produced	7440382
Barium	5.80E-06	lbs/ton asphalt produced	7440393
Benz[a]anthracene	2.10E-07	lbs/ton asphalt produced	56553
Benzene	3.90E-04	lbs/ton asphalt produced	71432
Benzo[a]pyrene	9.80E-09	lbs/ton asphalt produced	50328
Benzo[b]fluoranthene	1.00E-07	lbs/ton asphalt produced	205992
Benzo[e]pyrene	1.10E-07	lbs/ton asphalt produced	192972
Benzo[g,h,i]perylene	4.00E-08	lbs/ton asphalt produced	191242
Benzo[k]fluoranthene	4.10E-08	lbs/ton asphalt produced	207089
Cadmium	4.10E-07	lbs/ton asphalt produced	7440439
Chromium	5.50E-06	lbs/ton asphalt produced	7440473
Chromium, hexavalent (& compounds)	4.50E-07	lbs/ton asphalt produced	18540299
Chrysene	1.80E-07	lbs/ton asphalt produced	218019
Cobalt	2.60E-08	lbs/ton asphalt produced	7440484
Copper	3.10E-06	lbs/ton asphalt produced	7440508
Ethyl benzene	2.40E-04	lbs/ton asphalt produced	100414
Ethylene	7.00E-03	lbs/ton asphalt produced	74851
Fluoranthene	6.10E-07	lbs/ton asphalt produced	206440
Fluorene	1.10E-05	lbs/ton asphalt produced	86737
Formaldehyde	3.10E-03	lbs/ton asphalt produced	50000
Hexane	9.20E-04	lbs/ton asphalt produced	110543
Indeno[1,2,3-cd]pyrene	7.00E-09	lbs/ton asphalt produced	193395
Lead	1.50E-05	lbs/ton asphalt produced	7439921
Manganese	7.70E-06	lbs/ton asphalt produced	7439965
Mercury	2.60E-06	lbs/ton asphalt produced	7439976
Methyl chloroform {1,1,1-TCA}	4.80E-05	lbs/ton asphalt produced	71556
Naphthalene	6.50E-04	lbs/ton asphalt produced	91203
Nickel	6.30E-05	lbs/ton asphalt produced	7440020
Perylene	8.80E-09	lbs/ton asphalt produced	198550

Phenanthrene	2.30E-05	lbs/ton asphalt produced	85018
Phosphorus	2.80E-05	lbs/ton asphalt produced	7723140
Pyrene	3.00E-06	lbs/ton asphalt produced	129000
Selenium	3.50E-07	lbs/ton asphalt produced	7782492
Silver	4.80E-07	lbs/ton asphalt produced	7440224
Thallium	4.10E-09	lbs/ton asphalt produced	7440280
Toluene	2.90E-03	lbs/ton asphalt produced	108883
Total Heptachlorodibenzofuran	1.00E-11	lbs/ton asphalt produced	38998753
Total Heptachlorodibenzo-p-dioxin	1.90E-11	lbs/ton asphalt produced	37871004
Total Hexachlorodibenzofuran	1.30E-11	lbs/ton asphalt produced	55684941
Total Hexachlorodibenzo-p-dioxin	1.20E-11	lbs/ton asphalt produced	34465468
Total Pentachlorodibenzofuran	8.40E-11	lbs/ton asphalt produced	30402154
Total Pentachlorodibenzo-p-dioxin	2.20E-11	lbs/ton asphalt produced	36088229
Total Tetrachlorodibenzofuran	3.70E-12	lbs/ton asphalt produced	55722275
Total Tetrachlorodibenzo-p-dioxin	9.30E-13	lbs/ton asphalt produced	41903575
Xylenes (mixed)	2.00E-04	lbs/ton asphalt produced	1330207
Zinc	6.10E-05	lbs/ton asphalt produced	7440666

Asphalt Batch Plant Drum Mix HM Natural Gas

District Toxic Profile ID	169
Description	Asphalt Batch Plant Drum Mix HM Natural Gas
Source	Emission factors are from tables 11.1-10 (pg. 21) and 11.1-12 (pg. 30) in March 2004 AP 42 Chapter 11 Mineral Products Industry, Section 1 Hot Mix Asphalt Plants.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
2,2,4-Trimethylpentane	4.00E-05	lbs/ton asphalt produced	540841
2-Methyl naphthalene	7.40E-05	lbs/ton asphalt produced	91576
Acenaphthene	1.40E-06	lbs/ton asphalt produced	83329
Acenaphthylene	8.60E-06	lbs/ton asphalt produced	208968
Anthracene	2.20E-07	lbs/ton asphalt produced	120127
Antimony	1.80E-07	lbs/ton asphalt produced	7440360
Arsenic	5.60E-07	lbs/ton asphalt produced	7440382
Barium	5.80E-06	lbs/ton asphalt produced	7440393
Benz[a]anthracene	2.10E-07	lbs/ton asphalt produced	56553
Benzene	3.90E-04	lbs/ton asphalt produced	71432
Benzo[a]pyrene	9.80E-09	lbs/ton asphalt produced	50328
Benzo[b]fluoranthene	1.00E-07	lbs/ton asphalt produced	205992
Benzo[g,h,i]perylene	4.00E-08	lbs/ton asphalt produced	191242
Benzo[k]fluoranthene	4.10E-08	lbs/ton asphalt produced	207089
Cadmium	4.10E-07	lbs/ton asphalt produced	7440439
Chromium	5.50E-06	lbs/ton asphalt produced	7440473
Chromium, hexavalent (& compounds)	4.50E-07	lbs/ton asphalt produced	18540299
Chrysene	1.80E-07	lbs/ton asphalt produced	218019
Cobalt	2.60E-08	lbs/ton asphalt produced	7440484
Copper	3.10E-06	lbs/ton asphalt produced	7440508
Ethyl benzene	2.40E-04	lbs/ton asphalt produced	100414
Ethylene	7.00E-03	lbs/ton asphalt produced	74851
Fluoranthene	6.10E-07	lbs/ton asphalt produced	206440
Fluorene	3.80E-06	lbs/ton asphalt produced	86737
Formaldehyde	3.10E-03	lbs/ton asphalt produced	50000
Hexane	9.20E-04	lbs/ton asphalt produced	110543
Indeno[1,2,3-cd]pyrene	7.00E-09	lbs/ton asphalt produced	193395
Lead	6.20E-07	lbs/ton asphalt produced	7439921
Manganese	7.70E-06	lbs/ton asphalt produced	7439965
Mercury	2.40E-07	lbs/ton asphalt produced	7439976
Methyl chloroform {1,1,1-TCA}	4.80E-05	lbs/ton asphalt produced	71556
Naphthalene	9.00E-05	lbs/ton asphalt produced	91203
Nickel	6.30E-05	lbs/ton asphalt produced	7440020
Perylene	8.80E-09	lbs/ton asphalt produced	198550
Phenanthrene	7.60E-06	lbs/ton asphalt produced	85018
Phosphorus	2.80E-05	lbs/ton asphalt produced	7723140
Pyrene	5.40E-07	lbs/ton asphalt produced	129000
Selenium	3.50E-07	lbs/ton asphalt produced	7782492
Silver	4.80E-07	lbs/ton asphalt produced	7440224
Thallium	4.10E-09	lbs/ton asphalt produced	7440280
Toluene	1.50E-04	lbs/ton asphalt produced	108883
Xylenes (mixed)	2.00E-04	lbs/ton asphalt produced	1330207
Zinc	6.10E-05	lbs/ton asphalt produced	7440666

Asphalt Batch Plant Drum Mix HM Waste Oil

District Toxic Profile ID	171
Description	Asphalt Batch Plant Drum Mix HM Waste Oil
Source	Emission factors are from tables 11.1-10 (pg. 21) and 11.1-12 (pg. 30) in March 2004 AP 42 Chapter 11 Mineral Products Industry, Section 1 Hot Mix Asphalt Plants.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2,3,4,5,6,7,8-Octachlorodibenzofuran	4.80E-12	lbs/ton aspahlt produced	39001020
1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin	2.50E-11	lbs/ton aspahlt produced	3268879
1,2,3,4,6,7,8-Heptachlorodibenzofuran	6.50E-12	lbs/ton aspahlt produced	67562394
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	4.80E-12	lbs/ton aspahlt produced	35822469
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.70E-12	lbs/ton aspahlt produced	55673897
1,2,3,4,7,8-Hexachlorodibenzofuran	4.00E-12	lbs/ton aspahlt produced	70648269
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	4.20E-13	lbs/ton aspahlt produced	39227286
1,2,3,6,7,8-Hexachlorodibenzofuran	1.20E-12	lbs/ton aspahlt produced	57117449
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.30E-12	lbs/ton aspahlt produced	57653857
1,2,3,7,8,9-Hexachlorodibenzofuran	8.40E-12	lbs/ton aspahlt produced	72918219
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	9.80E-13	lbs/ton aspahlt produced	19408743
1,2,3,7,8-Pentachlorodibenzofuran	4.30E-12	lbs/ton aspahlt produced	57117416
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.10E-13	lbs/ton aspahlt produced	40321764
2,2,4-Trimethylpentane	4.00E-05	lbs/ton aspahlt produced	540841
2,3,4,6,7,8-Hexachlorodibenzofuran	1.90E-12	lbs/ton aspahlt produced	60851345
2,3,4,7,8-Pentachlorodibenzofuran	8.40E-13	lbs/ton aspahlt produced	57117314
2,3,7,8-Tetrachlorodibenzofuran	9.70E-13	lbs/ton aspahlt produced	51207319
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.10E-13	lbs/ton aspahlt produced	1746016
2-Methyl naphthalene	1.70E-04	lbs/ton aspahlt produced	91576
Acenaphthene	1.40E-06	lbs/ton aspahlt produced	83329
Acenaphthylene	2.20E-05	lbs/ton aspahlt produced	208968
Acetaldehyde	1.30E-03	lbs/ton aspahlt produced	75070
Acrolein	2.60E-05	lbs/ton aspahlt produced	107028
Anthracene	3.10E-06	lbs/ton aspahlt produced	120127
Antimony	1.80E-07	lbs/ton aspahlt produced	7440360
Arsenic	5.60E-07	lbs/ton aspahlt produced	7440382
Barium	5.80E-06	lbs/ton aspahlt produced	7440393
Benz[a]anthracene	2.10E-07	lbs/ton aspahlt produced	56553
Benzene	3.90E-04	lbs/ton aspahlt produced	71432
Benzo[a]pyrene	9.80E-09	lbs/ton aspahlt produced	50328
Benzo[b]fluoranthene	1.00E-07	lbs/ton aspahlt produced	205992
Benzo[e]pyrene	1.10E-07	lbs/ton aspahlt produced	192972
Benzo[g,h,i]perylene	4.00E-08	lbs/ton aspahlt produced	191242
Benzo[k]fluoranthene	4.10E-08	lbs/ton aspahlt produced	207089
Cadmium	4.10E-07	lbs/ton aspahlt produced	7440439
Chromium	5.50E-06	lbs/ton aspahlt produced	7440473
Chromium, hexavalent (& compounds)	4.50E-07	lbs/ton aspahlt produced	18540299
Chrysene	1.80E-07	lbs/ton aspahlt produced	218019
Cobalt	2.60E-08	lbs/ton aspahlt produced	7440484
Copper	3.10E-06	lbs/ton aspahlt produced	7440508
Crotonaldehyde	8.60E-05	lbs/ton aspahlt produced	4170303
Ethyl benzene	2.40E-04	lbs/ton aspahlt produced	100414
Ethylene	7.00E-03	lbs/ton aspahlt produced	74851
Fluoranthene	6.10E-07	lbs/ton aspahlt produced	206440
Fluorene	1.10E-05	lbs/ton aspahlt produced	86737
Formaldehyde	3.10E-03	lbs/ton aspahlt produced	50000
Hexane	9.20E-04	lbs/ton aspahlt produced	110543
Indeno[1,2,3-cd]pyrene	7.00E-09	lbs/ton aspahlt produced	193395
Isobutyraldehyde	1.60E-04	lbs/ton aspahlt produced	78842
Lead	1.50E-05	lbs/ton aspahlt produced	7439921
Manganese	7.70E-06	lbs/ton aspahlt produced	7439965
Mercury	2.60E-06	lbs/ton aspahlt produced	7439976

Methyl chloroform {1,1,1-TCA}	4.80E-05	lbs/ton aspahlt produced	71556
Methyl ethyl ketone {2-Butanone}	2.00E-05	lbs/ton aspahlt produced	78933
Naphthalene	6.50E-04	lbs/ton aspahlt produced	91203
Nickel	6.30E-05	lbs/ton aspahlt produced	7440020
Perylene	8.80E-09	lbs/ton aspahlt produced	198550
Phenanthrene	2.30E-05	lbs/ton aspahlt produced	85018
Phosphorus	2.80E-05	lbs/ton aspahlt produced	7723140
Propionaldehyde	1.30E-04	lbs/ton aspahlt produced	123386
Pyrene	3.00E-06	lbs/ton aspahlt produced	129000
Quinone	1.60E-04	lbs/ton aspahlt produced	106514
Selenium	3.50E-07	lbs/ton aspahlt produced	7782492
Silver	4.80E-07	lbs/ton aspahlt produced	7440224
Thallium	4.10E-09	lbs/ton aspahlt produced	7440280
Toluene	2.90E-03	lbs/ton aspahlt produced	108883
Total Heptachlorodibenzofuran	1.00E-11	lbs/ton aspahlt produced	38998753
Total Heptachlorodibenzo-p-dioxin	1.90E-11	lbs/ton aspahlt produced	37871004
Total Hexachlorodibenzofuran	1.30E-11	lbs/ton aspahlt produced	55684941
Total Hexachlorodibenzo-p-dioxin	1.20E-11	lbs/ton aspahlt produced	34465468
Total Pentachlorodibenzofuran	8.40E-11	lbs/ton aspahlt produced	30402154
Total Pentachlorodibenzo-p-dioxin	2.20E-11	lbs/ton aspahlt produced	36088229
Total Tetrachlorodibenzofuran	3.70E-12	lbs/ton aspahlt produced	55722275
Total Tetrachlorodibenzo-p-dioxin	9.30E-13	lbs/ton aspahlt produced	41903575
Xylenes (mixed)	2.00E-04	lbs/ton aspahlt produced	1330207
Zinc	6.10E-05	lbs/ton aspahlt produced	7440666

Asphalt Concrete with Rubber VOC Emissions

District Toxic Profile ID	256
Description	Asphalt Concrete with Rubber VOC Emissions
Source	Emissions factors are derived from the 1993 Virginia Department of Transportation report, Final Air Quality Assessment Hot Mix Asphalt· Crumb Rubber Pilot Program. Test data from stack testing of an asphalt plant in Rockville, Virginia.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	8.10E-03	lb/lb VOC	71432
Ethyl benzene	3.64E-03	lb/lb VOC	100414
PAHs, total, w/o individ. components reported	9.01E-03	lb/lb VOC	1151
Styrene	1.17E-02	lb/lb VOC	100425
Toluene	4.76E-03	lb/lb VOC	108883
Xylenes (mixed)	8.61E-03	lb/lb VOC	1330207

Asphalt Concrete w/o Rubber VOC Emissions

District Toxic Profile ID	257
Description	Asphalt Concrete w/o Rubber VOC Emissions
Source	Emissions factors are derived from the 1993 Virginia Department of Transportation report, Final Air Quality Assessment Hot Mix Asphalt· Crumb Rubber Pilot Program. Test data from stack testing of an asphalt plant in Rockville, Virginia.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	2.18E-02	lb/lb VOC	71432
Ethyl benzene	2.26E-03	lb/lb VOC	100414
PAHs, total, w/o individ. components reported	6.50E-03	lb/lb VOC	1151
Styrene	1.17E-02	lb/lb VOC	100425
Toluene	5.74E-03	lb/lb VOC	108883
Xylenes (mixed)	5.36E-03	lb/lb VOC	1330207

Asphalt Dust

District Toxic Profile ID	157
Description	Asphalt Dust
Source	Emission factors are derived from a 1997 asphalt dust profile from the EPA's speciation program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.10E-01	lb/lb PM10	7429905
Ammonia	3.39E-04	lb/lb PM10	7664417
Antimony	1.00E-04	lb/lb PM10	7440360
Barium	9.97E-04	lb/lb PM10	7440393
Bromine	2.10E-05	lb/lb PM10	7726956
Chlorine	8.61E-04	lb/lb PM10	7782505
Chromium	5.60E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.80E-06	lb/lb PM10	18540299
Copper	6.60E-05	lb/lb PM10	7440508
Lead	8.00E-06	lb/lb PM10	7439921
Manganese	6.62E-04	lb/lb PM10	7439965
Mercury	7.00E-06	lb/lb PM10	7439976
Nickel	1.70E-05	lb/lb PM10	7440020
Phosphorus	1.13E-03	lb/lb PM10	7723140
Selenium	2.00E-06	lb/lb PM10	7782492
SULFATES	2.18E-03	lb/lb PM10	9960
Thallium	1.30E-05	lb/lb PM10	7440280
Vanadium (fume or dust)	1.80E-05	lb/lb PM10	7440622
Zinc	5.60E-05	lb/lb PM10	7440666

Clay Dust and Brick Grinding

District Toxic Profile ID	227
Description	Clay Dust and Brick Grinding
Source	The emission factors are derived from a 2009 speciation profile, "Brick Grinding and Screening - Composite" from EPA Speciate 4.4, test data from Emissions Inventory of PM2.5 Trace Elements across the United States, Environ. Sci. Technol., 43 (15), pp 5790–5796, 2009

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	2.33E-02	lb/ lb PM	7429905
Antimony	7.70E-05	lb/ lb PM	7440360
Arsenic	6.00E-06	lb/ lb PM	7440382
Chromium	5.00E-06	lb/ lb PM	7440473
Chromium, hexavalent (& compounds)	2.50E-07	lb/ lb PM	18540299
Copper	5.30E-05	lb/ lb PM	7440508
Lead	6.70E-05	lb/ lb PM	7439921
Manganese	4.68E-04	lb/ lb PM	7439965
Nickel	6.30E-05	lb/ lb PM	7440020
Phosphorus	2.95E-04	lb/ lb PM	7723140
Selenium	6.00E-06	lb/ lb PM	7782492
Silver	6.80E-05	lb/ lb PM	7440224
SULFATES	9.83E-03	lb/ lb PM	9960
Zinc	2.43E-04	lb/ lb PM	7440666

Coal Dust

District Toxic Profile ID	186
Description	Coal Dust
Source	Emission factors are derived from the 1989 Coal Dust profile #2120410, "Fugitive dust from storage and handling" from EPA Speciate 4.0, test data from the 1982 NEA report, East Helena Source Apportionment Study to the State of Montana.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	6.46E-02	lb/lb PM10	7429905
Antimony	1.30E-04	lb/lb PM10	7440360
Barium	2.30E-04	lb/lb PM10	7440393
Cadmium	1.20E-04	lb/lb PM10	7440439
Chlorine	9.80E-04	lb/lb PM10	7782505
Chromium	4.00E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.00E-06	lb/lb PM10	18540299
Cobalt	6.67E-03	lb/lb PM10	7440484
Copper	6.00E-05	lb/lb PM10	7440508
Lead	3.40E-04	lb/lb PM10	7439921
Manganese	4.00E-05	lb/lb PM10	7439965
Phosphorus	1.17E-03	lb/lb PM10	7723140
Zinc	1.00E-04	lb/lb PM10	7440666

Concrete California Default

District Toxic Profile ID	284
Description	Z2 EI California Concrete default PM10
Source	The emissions factors are based on November 1998 SDAPCD emission factors and default dry percentages.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.01E-02	lb/lb PM10	7429905
Arsenic	1.41E-05	lb/lb PM10	7440382
Barium	1.17E-04	lb/lb PM10	7440393
Beryllium	7.16E-07	lb/lb PM10	7440417
Cadmium	6.59E-07	lb/lb PM10	7440439
Chromium	2.07E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.30E-06	lb/lb PM10	18540299
Cobalt	5.74E-06	lb/lb PM10	7440484
Copper	2.30E-05	lb/lb PM10	7440508
Lead	2.79E-05	lb/lb PM10	7439921
Manganese	3.13E-04	lb/lb PM10	7439965
Nickel	1.73E-05	lb/lb PM10	7440020
Selenium	6.59E-07	lb/lb PM10	7782492
Silica, crystalline	3.33E-02	lb/lb PM10	1175
Zinc	6.07E-05	lb/lb PM10	7440666

Concrete Batch Plant - Cement silos

District Toxic Profile ID	85
Description	Concrete Batch Plant - Cement silos
Source	The emission factors are from the table, "DEFAULT VALUES - TRACE METAL CONCENTRATIONS" in the 1998 San Diego Air Pollution Control District document, Concrete Batch Plant Operations

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.60E-02	lb/lb PM10	7429905
Arsenic	2.20E-05	lb/lb PM10	7440382
Beryllium	1.00E-06	lb/lb PM10	7440417
Cadmium	1.00E-06	lb/lb PM10	7440439
Chromium	5.80E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	5.00E-06	lb/lb PM10	18540299
Copper	3.00E-05	lb/lb PM10	7440508
Lead	1.20E-05	lb/lb PM10	7439921
Manganese	4.00E-04	lb/lb PM10	7439965
Nickel	2.50E-05	lb/lb PM10	7440020
Selenium	1.00E-06	lb/lb PM10	7782492
Zinc	9.20E-05	lb/lb PM10	7440666

Concrete Batch Plant - Fly Ash Silos

District Toxic Profile ID	86
Description	Concrete Batch Plant - Fly Ash Silos
Source	The emission factors are from the table, "DEFAULT VALUES - TRACE METAL CONCENTRATIONS" in the 1998 San Diego Air Pollution Control District document, Concrete Batch Plant Operations

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.75E-02	lb/lb PM10	7429905
Arsenic	1.50E-05	lb/lb PM10	7440382
Beryllium	2.00E-06	lb/lb PM10	7440417
Cadmium	1.00E-06	lb/lb PM10	7440439
Chromium	2.60E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	3.00E-06	lb/lb PM10	18540299
Copper	2.30E-05	lb/lb PM10	7440508
Lead	1.50E-05	lb/lb PM10	7439921
Manganese	8.00E-05	lb/lb PM10	7439965
Nickel	1.20E-05	lb/lb PM10	7440020
Selenium	1.00E-06	lb/lb PM10	7782492
Zinc	3.00E-05	lb/lb PM10	7440666

Diatomite Processing - PM10

District Toxic Profile ID	72
Description	Diatomite Processing - PM10
Source	The emission factors are from table 11.22-1, "TRACE ELEMENT CONTENT OF FINISHED DIATOMITE" in November 1995 AP 42 Chapter 11 Mineral Products Industry, Section 22 Diatomite Processing.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Antimony	2.00E-06	lb/lb PM10	7440360
Arsenic	5.00E-06	lb/lb PM10	7440382
Barium	3.00E-05	lb/lb PM10	7440393
Beryllium	1.00E-06	lb/lb PM10	7440417
Bromine	2.00E-05	lb/lb PM10	7726956
Cadmium	2.00E-06	lb/lb PM10	7440439
Chlorine	4.00E-04	lb/lb PM10	7782505
Chromium	1.00E-04	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	5.00E-06	lb/lb PM10	18540299
Cobalt	5.00E-06	lb/lb PM10	7440484
Copper	4.00E-05	lb/lb PM10	7440508
Lead	2.00E-06	lb/lb PM10	7439921
Manganese	6.00E-05	lb/lb PM10	7439965
Mercury	3.00E-07	lb/lb PM10	7439976
Molybdenum trioxide	5.00E-06	lb/lb PM10	1313275
Nickel	1.20E-04	lb/lb PM10	7440020
Selenium	1.00E-05	lb/lb PM10	7782492
Silver	5.00E-07	lb/lb PM10	7440224
Thallium	5.00E-07	lb/lb PM10	7440280
Vanadium (fume or dust)	2.00E-04	lb/lb PM10	7440622
Zinc	1.00E-05	lb/lb PM10	7440666

Petroleum Coke Dust PM10

District Toxic Profile ID	190
Description	Petroleum Coke Dust PM10
Source	Based on a study of petroleum coke dust emissions from open rail cars in northwest Washington and southwest British Columbia with EPA assistance (1994). See: http://www.epa.gov/osp/tribes/NatForum06/3_2.pdf

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Arsenic	2.60E-06	lb/lb PM10	7440382
Barium	9.90E-07	lb/lb PM10	7440393
Cadmium	2.60E-06	lb/lb PM10	7440439
Chromium	3.90E-06	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.95E-07	lb/lb PM10	18540299
Cobalt	6.20E-07	lb/lb PM10	7440484
Lead	2.60E-06	lb/lb PM10	7439921
Mercury	2.60E-06	lb/lb PM10	7439976
Vanadium (fume or dust)	3.60E-05	lb/lb PM10	7440622

Petroleum Coke Dust VOC

District Toxic Profile ID	191
Description	Petroleum Coke Dust VOC
Source	Based on a study of petroleum coke dust emissions from open rail cars in northwest Washington and southwest British Columbia with EPA assistance (1994). See: http://www.epa.gov/osp/tribes/NatForum06/3_2.pdf

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
2-Methyl naphthalene	2.50E-06	lb/lb VOC	91576
Anthracene	6.60E-07	lb/lb VOC	120127
Benz[a]anthracene	2.20E-06	lb/lb VOC	56553
Benzo[a]pyrene	2.20E-06	lb/lb VOC	50328
Benzo[b]fluoranthene	1.10E-06	lb/lb VOC	205992
Benzo[g,h,i]perylene	1.40E-06	lb/lb VOC	191242
Chrysene	2.30E-06	lb/lb VOC	218019
Dibenz[a,h]anthracene	9.90E-07	lb/lb VOC	53703
Dibenzofuran	2.10E-07	lb/lb VOC	132649
Fluorene	3.10E-07	lb/lb VOC	86737
Indeno[1,2,3-cd]pyrene	5.60E-07	lb/lb VOC	193395
Naphthalene	1.60E-06	lb/lb VOC	91203
Pyrene	1.70E-06	lb/lb VOC	129000

Recycled Asphalt and Road Concrete WC

District Toxic Profile ID	289
Description	Recycled Asphalt and Road Concrete WC
Source	Emission factors are derived from a worst case compilation of the 1997 dust profile (#4082), from EPA Speciate 4.0, test data from a Mexico City Asphalt Plant and the District's derivation of the 1998 San Diego Air Pollution Control District profiles for cement, fly ash, aggregate based on the CALTRANS road concrete default composition.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.10E-01	lb/lb PM10	7429905
Ammonia	3.39E-04	lb/lb PM10	7664417
Antimony	1.00E-04	lb/lb PM10	7440360
Arsenic	1.41E-05	lb/lb PM10	7440382
Barium	9.97E-04	lb/lb PM10	7440393
Beryllium	2.10E-05	lb/lb PM10	7440417
Bromine	7.16E-07	lb/lb PM10	7726956
Cadmium	6.59E-07	lb/lb PM10	7440439
Chlorine	8.61E-04	lb/lb PM10	7782505
Chromium	5.60E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.80E-06	lb/lb PM10	18540299
Cobalt	5.74E-06	lb/lb PM10	7440484
Copper	6.60E-05	lb/lb PM10	7440508
Lead	2.79E-05	lb/lb PM10	7439921
Manganese	6.62E-04	lb/lb PM10	7439965
Mercury	7.00E-06	lb/lb PM10	7439976
Nickel	1.73E-05	lb/lb PM10	7440020
Phosphorus	1.13E-03	lb/lb PM10	7723140
Selenium	2.00E-06	lb/lb PM10	7782492
Silica, crystalline	3.33E-02	lb/lb PM10	1175
SULFATES	2.18E-03	lb/lb PM10	9960
Thallium	1.30E-05	lb/lb PM10	7440280
Vanadium (fume or dust)	1.80E-05	lb/lb PM10	7440622
Zinc	6.07E-05	lb/lb PM10	7440666

Miscellaneous

Landfill Fugitives PM10

District Toxic Profile ID	216
Description	Landfill Fugitives PM10
Source	*Emission Factors are from CARB PM Species Profile #421, derived from the 1989 Report Determination of Particle Size Distribution and Chemical Composition of Particulate Matter from Selected Sources in California.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Ammonia	1.22E-04	lb/lb PM10	7664417
Antimony	1.00E-05	lb/lb PM10	7440360
Arsenic	1.70E-05	lb/lb PM10	7440382
Bromine	2.60E-05	lb/lb PM10	7726956
Cadmium	2.10E-05	lb/lb PM10	7440439
Chlorine	3.41E-03	lb/lb PM10	7782505
Chromium	2.24E-04	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.12E-05	lb/lb PM10	18540299
Copper	1.02E-04	lb/lb PM10	7440508
Lead	5.57E-04	lb/lb PM10	7439921
Manganese	9.45E-04	lb/lb PM10	7439965
Nickel	5.90E-05	lb/lb PM10	7440020
Phosphorus	1.50E-03	lb/lb PM10	7723140
Selenium	2.00E-06	lb/lb PM10	7782492
SULFATES	4.29E-03	lb/lb PM10	9960
Vanadium (fume or dust)	2.76E-04	lb/lb PM10	7440622
Zinc	5.18E-04	lb/lb PM10	7440666

Landfill Fugitives VOC

District Toxic Profile ID	215
Description	Landfill Fugitive VOC
Source	Emissions factors are derived from Table 2.4-1, "DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS FOR LANDFILLS WITH WASTE IN PLACE ON OR AFTER 1992" in the 2008 update (draft) of AP42 Chapter 2 section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1-Dichloroethane	2.86E-03	Lbs/lb VOC	75343
1,1,2-Trichloroethane	2.93E-04	Lbs/lb VOC	79005
1,1,2,2-Tetrachloroethane	1.25E-03	Lbs/lb VOC	79345
1,2-Dichloroethylene	1.53E-02	Lbs/lb VOC	540590
1,2,4-Trichlorobenzene	1.39E-05	Lbs/lb VOC	120821
1,2,4-Trimethylbenzene	2.29E-03	Lbs/lb VOC	95636
1,3-Butadiene	1.25E-04	Lbs/lb VOC	106990
1,4-Dioxane	1.01E-05	Lbs/lb VOC	123911
2,2,4-Trimethylpentane	9.74E-04	Lbs/lb VOC	540841
Acetaldehyde	4.74E-05	Lbs/lb VOC	75070
Acetonitrile	3.17E-04	Lbs/lb VOC	75058
Benzene	2.60E-03	Lbs/lb VOC	71432
Benzyl Chloride	3.18E-05	Lbs/lb VOC	100447
Bromodichloromethane	2.00E-05	Lbs/lb VOC	75274
Bromoform (Tribromomethane)	4.35E-05	Lbs/lb VOC	75252
Carbon disulfide	1.55E-04	Lbs/lb VOC	75150
Carbon Monoxide	9.49E-03	Lbs/lb VOC	630080
Carbon Tetrachloride	1.70E-05	Lbs/lb VOC	56235
Carbonyl sulfide	1.02E-04	Lbs/lb VOC	463581
Chlorinated Fluorocarbon {CFC-113}	1.75E-04	Lbs/lb VOC	76131

Chlorobenzene	7.57E-04	Lbs/lb VOC	108907
Chlorodibromomethane	4.37E-05	Lbs/lb VOC	124481
Chlorodifluoromethane (Freon 22)	9.56E-04	Lbs/lb VOC	75456
Cumene (Isopropylbenzene)	7.18E-04	Lbs/lb VOC	98828
Cyclohexane	1.18E-03	Lbs/lb VOC	110827
Dichlorodifluoromethene (Freon 12)	1.98E-03	Lbs/lb VOC	75718
Ethyl Benzene	7.17E-03	Lbs/lb VOC	100414
Ethyl chloride (Chloroethane)	3.54E-03	Lbs/lb VOC	75003
Ethylene dibromide (EDB)	1.25E-05	Lbs/lb VOC	106934
Ethylene Dichloride	2.19E-04	Lbs/lb VOC	107062
Formaldehyde	4.88E-06	Lbs/lb VOC	50000
Hexachlorobutadiene	1.26E-05	Lbs/lb VOC	87683
Hexane	3.71E-03	Lbs/lb VOC	110543
Hydrogen sulfide	1.51E-02	Lbs/lb VOC	7783064
Isoprene, except from vegetative emission sources	1.56E-05	Lbs/lb VOC	78795
Isopropyl Alcohol	1.50E-03	Lbs/lb VOC	67630
Mercury	3.40E-07	Lbs/lb VOC	7439976
Methyl Bromide	2.77E-05	Lbs/lb VOC	74839
Methyl Chloride (Chloromethane)	1.71E-04	Lbs/lb VOC	74873
Methylene bromide (Dibromomethane)	2.02E-06	Lbs/lb VOC	74953
Methylene chloride (Dichloromethane)	7.25E-03	Lbs/lb VOC	75092
Methyl Chloroform (1,1,1 Trichloroethane)	4.50E-04	Lbs/lb VOC	71556
Methyl ethyl ketone	4.02E-03	Lbs/lb VOC	78933
Methyl isobutyl ketone (Hexone)	1.23E-03	Lbs/lb VOC	108101
Methyl tert-butyl ether (MTBE)	1.44E-04	Lbs/lb VOC	1634044
Naphthalene	1.90E-04	Lbs/lb VOC	91203
p-Dichlorobenzene	1.92E-03	Lbs/lb VOC	106467
Perchloroethylene (Tetrachloroethene)	127184	Lbs/lb VOC	4.68E-03
Propylene	115071	Lbs/lb VOC	1.94E-03
Styrene (Vinylbenzene)	100425	Lbs/lb VOC	5.95E-04
Toluene (Methyl benzene)	108883	Lbs/lb VOC	3.78E-02
Trichloroethylene	79016	Lbs/lb VOC	1.51E-03
Vinyl chloride	75014	Lbs/lb VOC	1.23E-03
Vinylidene Chloride	75354	Lbs/lb VOC	2.15E-04
Xylene	1330207	Lbs/lb VOC	1.36E-02

Paperboard Scrap

District Toxic Profile ID	76
Description	Paperboard Scrap
Source	Average profile developed from original profiles representing the source category group 307xxxxx. Speciate 3.2 Jan. 05 1989 Shareef, G. S. Engineering Judgement, Radian Corporation. September 1987.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	7.80E-04	lb/lb PM10	7429905
Antimony	4.00E-05	lb/lb PM10	7440360
Arsenic	1.00E-05	lb/lb PM10	7440382
Barium	1.60E-04	lb/lb PM10	7440393
Bromine	1.00E-04	lb/lb PM10	7726956
Cadmium	3.00E-05	lb/lb PM10	7440439
Chromium	2.00E-05	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.00E-06	lb/lb PM10	18540299
Copper	3.00E-05	lb/lb PM10	7440508
Lead	4.00E-05	lb/lb PM10	7439921
Manganese	1.70E-04	lb/lb PM10	7439965
Nickel	7.00E-05	lb/lb PM10	7440020
Phosphorus	2.60E-04	lb/lb PM10	7723140
Selenium	1.00E-05	lb/lb PM10	7782492
Silver	6.00E-05	lb/lb PM10	7440224
SULFATES	1.98E-01	lb/lb PM10	9960
Vanadium (fume or dust)	9.00E-05	lb/lb PM10	7440622
Zinc	5.00E-05	lb/lb PM10	7440666

POTW

District Toxic Profile ID	252
Description	POTW
Source	Project engineer will provide ammonia and hydrogen sulfide emissions. Emission factors derived from the 1990 VOC profile #3003, "Wastewater Treatment Plants" from EPA Speciate 4.0, test data from CARB Hot Spots Data report, Final Report for Publically Owned Treatment Works.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Dichlorobenzene	2.00E-04	lb/lb VOC	541731
1,4-Dioxane	3.00E-04	lb/lb VOC	123911
Acetaldehyde	1.40E-03	lb/lb VOC	75070
Benzene	4.00E-03	lb/lb VOC	71432
Carbon tetrachloride	6.00E-04	lb/lb VOC	56235
Chlorobenzene	1.00E-04	lb/lb VOC	108907
Chloroform	6.87E-02	lb/lb VOC	67663
Di(2-ethylhexyl) phthalate	3.00E-04	lb/lb VOC	117817
Dichlorobenzenes (mixed isomers)	1.08E-02	lb/lb VOC	25321226
Ethylene dibromide {EDB}	2.00E-04	lb/lb VOC	106934
Ethylene dichloride {EDC}	4.00E-04	lb/lb VOC	107062
Formaldehyde	7.20E-03	lb/lb VOC	50000
Methyl chloroform {1,1,1-TCA}	9.06E-02	lb/lb VOC	71556
Methylene chloride {Dichloromethane}	1.06E-01	lb/lb VOC	75092
p-Dichlorobenzene	1.05E-02	lb/lb VOC	106467
Perchloroethylene {Tetrachloroethene}	8.60E-02	lb/lb VOC	127184
Phenol	2.50E-03	lb/lb VOC	108952
Styrene	2.00E-04	lb/lb VOC	100425
Toluene	4.88E-02	lb/lb VOC	108883
Trichloroethylene	1.06E-02	lb/lb VOC	79016
Vinyl chloride	5.00E-04	lb/lb VOC	75014
Vinylidene chloride	4.00E-04	lb/lb VOC	75354
Xylenes (mixed)	5.88E-02	lb/lb VOC	1330207

Z1 SU Asphalt Blowing with Blow Cycle no ctrl

District Toxic Profile ID	291
Description	Z2 EI Asphalt Blowing with Blow Cycle no ctrl
Source	*The emission factors were derived from table 5-10 "Summary of Emissions Factors for Controlled Asphalt Blowing" (pg. 5-20, uncontrolled values with blow cycle) in the May 2011 Emission Estimation Protocol for Petroleum Refineries. (Source,1998 Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Volume 1 and 2.)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	1.80E-01	lbs/MMscf	75070
Arsenic	1.30E+00	lbs/MMscf	7440382
Benzene	3.20E+01	lbs/MMscf	71432
Beryllium	2.60E-01	lbs/MMscf	7440417
Cadmium	5.30E-01	lbs/MMscf	7440439
Chromium	4.20E+00	lbs/MMscf	7440473
Chromium, hexavalent (& compounds)	3.20E-01	lbs/MMscf	18540299
Copper	4.80E+00	lbs/MMscf	7440508
Ethyl benzene	8.60E+01	lbs/MMscf	100414
Formaldehyde	3.60E-01	lbs/MMscf	50000
Hydrochloric acid	2.20E-01	lbs/MMscf	7647010
Hydrogen sulfide	2.10E+02	lbs/MMscf	7783064
Lead	5.30E+00	lbs/MMscf	7439921

Manganese	1.20E+01	lbs/MMscf	7439965
Mercury	9.10E-01	lbs/MMscf	7439976
Nickel	6.70E+00	lbs/MMscf	7440020
Phenol	7.60E+00	lbs/MMscf	108952
Selenium	1.30E+00	lbs/MMscf	7782492
Xylenes (mixed)	8.60E+01	lbs/MMscf	1330207
Zinc	8.40E+01	lbs/MMscf	7440666

Z1 SU Asphalt Blowing without Blow Cycle no ctrl

District Toxic Profile ID	292
Description	Z2 EI Asphalt Blowing without Blow Cycle no ctrl
Source	*The emission factors were derived from table 5-10 "Summary of Emissions Factors for Controlled Asphalt Blowing" (pg. 5-20, uncontrolled values without blow cycle) in the May 2011 Emission Estimation Protocol for Petroleum Refineries. (Source,1998 Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Volume 1 and 2.)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.30E-01	lbs/MMscf	75070
Arsenic	1.20E+00	lbs/MMscf	7440382
Benzene	2.80E+01	lbs/MMscf	71432
Beryllium	2.30E-01	lbs/MMscf	7440417
Cadmium	4.70E-01	lbs/MMscf	7440439
Chromium	1.40E+00	lbs/MMscf	7440473
Chromium, hexavalent (& compounds)	3.30E-01	lbs/MMscf	18540299
Copper	3.80E+00	lbs/MMscf	7440508
Ethyl benzene	7.60E+01	lbs/MMscf	100414
Formaldehyde	1.30E+00	lbs/MMscf	50000
Hydrochloric acid	8.20E-02	lbs/MMscf	7647010
Hydrogen sulfide	1.80E+02	lbs/MMscf	7783064
Lead	4.70E+00	lbs/MMscf	7439921
Manganese	2.10E+01	lbs/MMscf	7439965
Mercury	8.50E-01	lbs/MMscf	7439976
Nickel	6.00E+00	lbs/MMscf	7440020
Phenol	4.60E+00	lbs/MMscf	108952
Selenium	1.20E+00	lbs/MMscf	7782492
Xylenes (mixed)	7.60E+01	lbs/MMscf	1330207
Zinc	5.40E+01	lbs/MMscf	7440666

Z1 SU Asphalt Roofing Dipping and Storage PM

District Toxic Profile ID	65
Description	Z1 SU Asphalt Roofing Dipping and Storage PM
Source	The emission factors were taken from CARB Speciation Profiles 341

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Barium	5.00E-04	lb/lb PM10	7440393
Bromine	5.00E-04	lb/lb PM10	7726956
Cadmium	5.00E-04	lb/lb PM10	7440439
Chlorine	5.00E-04	lb/lb PM10	7782505
Cobalt	2.00E-02	lb/lb PM10	7440484
Copper	5.00E-04	lb/lb PM10	7440508
Lead	5.00E-04	lb/lb PM10	7439921
Manganese	5.50E-03	lb/lb PM10	7439965
Nickel	5.50E-03	lb/lb PM10	7440020
Selenium	5.50E-03	lb/lb PM10	7782492
Silver	5.00E-04	lb/lb PM10	7440224
SULFATES	2.26E-01	lb/lb PM10	9960
Zinc	5.50E-03	lb/lb PM10	7440666

Z1 SU Asphalt Roofing Dipping and Storage VOCs

District Toxic Profile ID	66
Description	Z1 SU Asphalt Roofing Dipping and Storage VOCs
Source	The emission factors were taken from a worst case summation of CARB Speciation Profiles 21, 22, and 24

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	8.00E-03	lb/lb VOC	71432
Ethylene	2.00E-02	lb/lb VOC	74851
Formaldehyde	2.50E-02	lb/lb VOC	50000
Hexane	4.90E-02	lb/lb VOC	110543
Propylene	2.00E-02	lb/lb VOC	115071
Toluene	1.90E-02	lb/lb VOC	108883

Z1 SU Asphalt Storage VOCs

District Toxic Profile ID	67
Description	Z1 SU Asphalt Storage VOCs
Source	The emission factors were taken from a worst case summation of CARB Speciation Profiles 715, 716

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Ethyl benzene	2.32E-02	lb/lb VOC	100414
Naphthalene	6.53E-02	lb/lb VOC	91203
o-Xylene	3.73E-02	lb/lb VOC	95476
Toluene	6.45E-02	lb/lb VOC	108883
Trimethylbenzenes	8.95E-02	lb/lb VOC	25551137
Xylenes (mixed)	8.56E-02	lb/lb VOC	1330207

Z1 SU Gasoline Dispensing Op VOC Liquid Speciation

District Toxic Profile ID	424
Description	Z1 SU Gasoline Dispensing Op VOC Liquid Speciation
Source	These emission factors are from table 11, "Content of Gasoline for Substances with OEHHA Chronic Health Factor (Combined Winter/Summer) in CARB's 2022 Gasoline Service Station Industrywide Risk Assessment Technical Guidance.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	7.07E-03	lb/lb VOC	71432
Ethyl benzene	1.29E-02	lb/lb VOC	100414
Hexane	1.86E-02	lb/lb VOC	110543
Naphthalene	1.74E-03	lb/lb VOC	91203
Propylene	1.22E-06	lb/lb VOC	115071
Toluene	5.63E-02	lb/lb VOC	108883
Xylenes (mixed)	6.59E-02	lb/lb VOC	1330207

Z1 SU Gasoline Dispensing Op VOC Vapor Speciation

District Toxic Profile ID	423
Description	Z1 SU Gasoline Dispensing Op VOC Vapor Speciation
Source	These emission factors are from table 11, "Content of Gasoline for Substances with OEHHA Chronic Health Factor (Combined Winter/Summer) in CARB's 2022 Gasoline Service Station Industrywide Risk Assessment Technical Guidance.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	4.57E-03	lb/lb VOC	71432
Ethyl benzene	1.07E-03	lb/lb VOC	100414
Hexane	1.82E-02	lb/lb VOC	110543
Naphthalene	4.45E-06	lb/lb VOC	91203
Propylene	3.594E-05	lb/lb VOC	115071
Toluene	1.11E-02	lb/lb VOC	108883
Xylenes (mixed)	4.09E-03	lb/lb VOC	1330207

Z2 EI Landfill Fugitive 1998 AP42

District Toxic Profile ID	266
Description	Z2 EI Landfill Fugitive 1998 AP42
Source	*Emissions factors are derived from Table 2.4-1, "DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS" in the 1998 EPA report, AP42 Chapter 2 section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.75E-01	lb/MMscf	79345
1,1-Dichloroethane	5.93E-01	lb/MMscf	75343
Acrylonitrile	8.57E-01	lb/MMscf	107131
Benzene	3.81E-01	lb/MMscf	71432
Bromodichloromethane	1.31E+00	lb/MMscf	75274
Carbon disulfide	1.13E-01	lb/MMscf	75150
Carbon monoxide	1.01E+01	lb/MMscf	630080
Carbon tetrachloride	1.57E-03	lb/MMscf	56235
Carbonyl sulfide	7.51E-02	lb/MMscf	463581
Chlorobenzene	7.18E-02	lb/MMscf	108907
Chlorodifluoromethane {Freon 22}	2.87E-01	lb/MMscf	75456
Chloroform	9.14E-03	lb/MMscf	67663
Dichlorodifluoromethane {Freon 12}	4.84E+00	lb/MMscf	75718
Ethyl benzene	1.25E+00	lb/MMscf	100414
Ethyl chloride {Chlorethane}	2.06E-01	lb/MMscf	75003
Ethylene dibromide {EDB}	4.79E-04	lb/MMscf	106934
Ethylene dichloride {EDC}	1.04E-01	lb/MMscf	107062
Hexane	1.44E+00	lb/MMscf	110543
Hydrogen sulfide	3.09E+00	lb/MMscf	7783064
Isopropyl alcohol	7.68E+00	lb/MMscf	67630
Mercury	1.49E-04	lb/MMscf	7439976
Methyl chloride {Chloromethane}	1.56E-01	lb/MMscf	74873
Methyl chloroform {1,1,1-TCA}	1.63E-01	lb/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.30E+00	lb/MMscf	78933
Methyl isobutyl ketone {Hexone}	4.78E-01	lb/MMscf	108101
Methylene chloride {Dichloromethane}	3.10E+00	lb/MMscf	75092
p-Dichlorobenzene	7.88E-02	lb/MMscf	106467
Perchloroethylene {Tetrachloroethene}	1.58E+00	lb/MMscf	127184
Toluene	5.97E+00	lb/MMscf	108883
Trichloroethylene	9.45E-01	lb/MMscf	79016
Vinyl chloride	1.17E+00	lb/MMscf	75014
Vinylidene chloride	4.95E-02	lb/MMscf	75354
Xylenes (mixed)	3.28E+00	lb/MMscf	1330207

Z2 EI Landfill Fugitive Co-Disposal 1998 AP42

District Toxic Profile ID	265
Description	Z2 EI Landfill Fugitive Co-Disposal 1998 AP42
Source	*Emissions factors are derived from Table 2.4-1, "DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS" in the 1998 EPA report, AP42 Chapter 2 section 4 Municipal Solid Waste Landfills.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	4.75E-01	lb/MMscf	79345
1,1-Dichloroethane	5.93E-01	lb/MMscf	75343
Acrylonitrile	8.57E-01	lb/MMscf	107131
Benzene	2.21E+00	lb/MMscf	71432
Bromodichloromethane	1.31E+00	lb/MMscf	75274
Carbon disulfide	1.13E-01	lb/MMscf	75150
Carbon monoxide	1.01E+01	lb/MMscf	630080
Carbon tetrachloride	1.57E-03	lb/MMscf	56235
Carbonyl sulfide	7.51E-02	lb/MMscf	463581
Chlorodifluoromethane {Freon 22}	2.87E-01	lb/MMscf	75456
Chloroform	9.14E-03	lb/MMscf	67663
Dichlorodifluoromethane {Freon 12}	4.84E+00	lb/MMscf	75718
Ethyl benzene	1.25E+00	lb/MMscf	100414
Ethyl chloride {Chlorethane}	2.06E-01	lb/MMscf	75003
Ethylene dibromide {EDB}	4.79E-04	lb/MMscf	106934
Ethylene dichloride {EDC}	1.04E-01	lb/MMscf	107062
Hexane	1.44E+00	lb/MMscf	110543
Hydrogen sulfide	3.09E+00	lb/MMscf	7783064
Isopropyl alcohol	7.68E+00	lb/MMscf	67630
Mercury	1.49E-04	lb/MMscf	7439976
Methyl chloride {Chloromethane}	1.56E-01	lb/MMscf	74873
Methyl chloroform {1,1,1-TCA}	1.63E-01	lb/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.30E+00	lb/MMscf	78933
Methyl isobutyl ketone {Hexone}	4.78E-01	lb/MMscf	108101
Methylene chloride {Dichloromethane}	3.10E+00	lb/MMscf	75092
p-Dichlorobenzene	7.88E-02	lb/MMscf	106467
Perchloroethylene {Tetrachloroethene}	1.58E+00	lb/MMscf	127184
Toluene	8.81E+00	lb/MMscf	108883
Trichloroethylene	9.45E-01	lb/MMscf	79016
Vinyl chloride	1.17E+00	lb/MMscf	75014
Vinylidene chloride	4.95E-02	lb/MMscf	75354
Xylenes (mixed)	3.28E+00	lb/MMscf	1330207

Z2 EI Landfill Fugitive Co-Disposal WIAC

District Toxic Profile ID	267
Description	Z2 EI Landfill Fugitive Co-Disposal WIAC
Source	*Emissions factors are derived from column 3 (WIAC-1) Table 2, "WIAC results compared with AP-42 defaults." in the 2001 SCS Engineers report,Waste· Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values. #These substances were not listed in the table but were present in the 1998 AP-42 report.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	3.00E-02	lb/MMscf	79345
1,1-Dichloroethane	1.87E-01	lb/MMscf	75343
Acrylonitrile	8.57E-01	lb/MMscf	107131
Benzene	2.07E+00	lb/MMscf	71432
Bromodichloromethane	6.50E-02	lb/MMscf	75274
Carbon disulfide	6.22E-02	lb/MMscf	75150
Carbon monoxide	1.01E+01	lb/MMscf	630080
Carbon tetrachloride	1.37E-03	lb/MMscf	56235
Carbonyl sulfide	2.81E-02	lb/MMscf	463581
Chlorobenzene	6.52E-02	lb/MMscf	108907
Chlorodifluoromethane {Freon 22}	7.83E-02	lb/MMscf	75456
Chloroform	6.40E-03	lb/MMscf	67663
Dichlorodifluoromethane {Freon 12}	5.40E-01	lb/MMscf	75718
Ethyl benzene	1.84E+00	lb/MMscf	100414
Ethyl chloride {Chlorethane}	3.93E-02	lb/MMscf	75003
Ethylene dibromide {EDB}	1.10E-02	lb/MMscf	106934
Ethylene dichloride {EDC}	3.03E-02	lb/MMscf	107062
Hexane	5.11E-01	lb/MMscf	110543
Hydrogen sulfide	2.05E+00	lb/MMscf	7783064
Isopropyl alcohol	1.21E+00	lb/MMscf	67630
Mercury	1.49E-04	lb/MMscf	7439976
Methyl chloride {Chloromethane}	3.21E-02	lb/MMscf	74873
Methyl chloroform {1,1,1-TCA}	5.72E-02	lb/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.94E+00	lb/MMscf	78933
Methyl isobutyl ketone {Hexone}	1.92E-01	lb/MMscf	108101
Methylene chloride {Dichloromethane}	7.36E-01	lb/MMscf	75092
p-Dichlorobenzene	6.03E-01	lb/MMscf	106467
Perchloroethylene {Tetrachloroethene}	5.05E-01	lb/MMscf	127184
Toluene	8.81E+00	lb/MMscf	108883
Trichloroethylene	9.45E-01	lb/MMscf	79016
Vinyl chloride	1.17E+00	lb/MMscf	75014
Vinylidene chloride	2.28E-02	lb/MMscf	75354
Xylenes (mixed)	3.28E+00	lb/MMscf	1330207

Z2 EI Landfill Fugitive WIAC

District Toxic Profile ID	268
Description	Z2 EI Landfill Fugitive WIAC
Source	*Emissions factors are derived from column 3 (WIAC-1) Table 2, "WIAC results compared with AP-42 defaults." in the 2001 SCS Engineers report,Waste· Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values. #These substances were not listed in the table but were present in the 1998 AP-42 report.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,1,2,2-Tetrachloroethane	3.00E-02	lb/MMscf	79345
1,1-Dichloroethane	1.87E-01	lb/MMscf	75343
Acrylonitrile	8.57E-01	lb/MMscf	107131
Benzene	1.94E-01	lb/MMscf	71432
Bromodichloromethane	6.50E-02	lb/MMscf	75274
Carbon disulfide	6.22E-02	lb/MMscf	75150
Carbon monoxide	1.01E+01	lb/MMscf	630080
Carbon tetrachloride	1.37E-03	lb/MMscf	56235
Carbonyl sulfide	2.81E-02	lb/MMscf	463581
Chlorobenzene	6.52E-02	lb/MMscf	108907
Chlorodifluoromethane {Freon 22}	7.83E-02	lb/MMscf	75456
Chloroform	6.40E-03	lb/MMscf	67663
Dichlorodifluoromethane {Freon 12}	5.40E-01	lb/MMscf	75718
Ethyl benzene	1.84E+00	lb/MMscf	100414
Ethyl chloride {Chlorethane}	3.93E-02	lb/MMscf	75003
Ethylene dibromide {EDB}	1.10E-02	lb/MMscf	106934
Ethylene dichloride {EDC}	3.03E-02	lb/MMscf	107062
Hexane	5.11E-01	lb/MMscf	110543
Hydrogen sulfide	2.05E+00	lb/MMscf	7783064
Isopropyl alcohol	1.21E+00	lb/MMscf	67630
Mercury	1.49E-04	lb/MMscf	7439976
Methyl chloride {Chloromethane}	3.21E-02	lb/MMscf	74873
Methyl chloroform {1,1,1-TCA}	5.72E-02	lb/MMscf	71556
Methyl ethyl ketone {2-Butanone}	1.94E+00	lb/MMscf	78933
Methyl isobutyl ketone {Hexone}	1.92E-01	lb/MMscf	108101
Methylene chloride {Dichloromethane}	7.36E-01	lb/MMscf	75092
p-Dichlorobenzene	6.03E-01	lb/MMscf	106467
Perchloroethylene {Tetrachloroethene}	5.05E-01	lb/MMscf	127184
Toluene	5.97E+00	lb/MMscf	108883
Trichloroethylene	9.45E-01	lb/MMscf	79016
Vinyl chloride	1.17E+00	lb/MMscf	75014
Vinylidene chloride	2.28E-02	lb/MMscf	75354
Xylenes (mixed)	3.28E+00	lb/MMscf	1330207

Z2 EI Peanut Oil Roaster

District Toxic Profile ID	288
Description	Z2 EI Peanut Oil Roaster
Source	Emission factors were derived from the 2009 study, Emissions of volatile aldehydes from heated cooking oils done by the University of Dayton, Environmental Sciences and Engineering Group. Peanut oil was considered the most similar to Canola oil, therefore the speciation for Canola oil at 270 degree was selected.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acrolein	1.13E-03	lb/gal-hr	107028
Propionaldehyde	7.80E-04	lb/gal-hr	123386

Z2 EI Polypropylene

District Toxic Profile ID	290
Description	Z2 EI Polypropylene
Source	Emission factors are from table 5 (worst-case value for each pollutant), "Summary of polypropylene extrusion emission for generic resin grades (ug/g or lbs/million lbs)" in the January 1999 Journal of the Air and Waste Management Association technical paper, Development of Emission Factors for Polypropylene Processing.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	1.58E+01	lb/million pounds	75070
Acrolein	8.10E-01	lb/million pounds	107028
Butyraldehyde	3.32E+00	lb/million pounds	123728
Ethylene	1.44E+00	lb/million pounds	74851
Formaldehyde	1.91E+01	lb/million pounds	50000
Methyl Ethyl Ketone	9.62E+00	lb/million pounds	78933
Propionaldehyde	3.31E+00	lb/million pounds	123386
Propylene	1.39E+01	lb/million pounds	115071

Z1 SU Polystyrene Molding

District Toxic Profile ID	57
Description	Z1 SU Polystyrene Molding
Source	District Legacy factor. Source Reference unknown. May have been submitted by molding facility and accepted in other evaluations.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	1.00E-08	lb/ton material	71432
Styrene	3.50E-07	lb/ton material	100425
Toluene	9.76E-10	lb/ton material	108883

Z1 SU Road Dust CATEF

District Toxic Profile ID	287
Description	Z1 SU Road Dust CATEF
Source	* Emission factors are derived from CARB's profile #416, based on Houck, J.E., Chow, J.C., Watson, J.G., et al. Determination of Particle Size Distribution and Chemical Composition of Particulate Matter from Selected Sources in California, Final Report. Desert Research Institute & OMNI Environmental. Prepared for California Air Resources Board. Agreement No. A6-175-32. June 30, 1989.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	9.59E-04	lb/lb PM10	7429905
Ammonia	1.12E-06	lb/lb PM10	7664417
Antimony	9.00E-08	lb/lb PM10	7440360
Arsenic	2.50E-07	lb/lb PM10	7440382
Barium	1.05E-05	lb/lb PM10	7440393
Bromine	2.40E-07	lb/lb PM10	7726956
Cadmium	3.60E-07	lb/lb PM10	7440439
Chlorine	1.54E-05	lb/lb PM10	7782505
Chromium	2.74E-06	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	1.37E-07	lb/lb PM10	18540299
Cobalt	1.84E-06	lb/lb PM10	7440484
Copper	1.05E-06	lb/lb PM10	7440508
Lead	1.06E-05	lb/lb PM10	7439921
Manganese	1.26E-05	lb/lb PM10	7439965
Mercury	1.90E-07	lb/lb PM10	7439976
Nickel	7.50E-07	lb/lb PM10	7440020
Phosphorus	1.94E-05	lb/lb PM10	7723140
Selenium	1.00E-08	lb/lb PM10	7782492
Silver	8.00E-08	lb/lb PM10	7440224
SULFATES	2.94E-05	lb/lb PM10	9960
Vanadium (fume or dust)	3.58E-06	lb/lb PM10	7440622
Zinc	7.67E-06	lb/lb PM10	7440666

Z1 SU Waste Wood/Resawing

District Toxic Profile ID	56
Description	Z1 SU Waste Wood/Resawing
Source	*Emission factors are derived from the PM 2.5 profile 91131, "Wood Products-Sawing-Composite" from EPA Speciate 4.3, test data from the 2009 article Emissions Inventory of PM2.5 Trace Elements across the United States in the journal, Environmental Science and Technology, 43 (15), pp 5790–5796). As a worst case the District assumes the PM 2.5 weight fractions are the same for PM 10.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Aluminum	1.80E-03	lb/lb PM10	7429905
Barium	5.00E-04	lb/lb PM10	7440393
Bromine	5.50E-03	lb/lb PM10	7726956
Chlorine	3.00E-04	lb/lb PM10	7782505
Chromium	5.00E-04	lb/lb PM10	7440473
Chromium, hexavalent (& compounds)	2.50E-05	lb/lb PM10	18540299
Copper	5.00E-04	lb/lb PM10	7440508
Lead	5.00E-04	lb/lb PM10	7439921
Manganese	3.00E-04	lb/lb PM10	7439965
Nickel	5.00E-04	lb/lb PM10	7440020
SULFATES	5.50E-03	lb/lb PM10	9960
Zinc	5.00E-04	lb/lb PM10	7440666

Petroleum

Diesel Storage Tanks

District Toxic Profile ID	23
Description	Diesel Storage Tanks
Source	The emission factors are from the 1993 District memo "Diesel Storage Weight Fractions."

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	8.80E-04	lb/lb VOC	71432
Toluene	4.82E-03	lb/lb VOC	108883
Xylenes (mixed)	4.20E-03	lb/lb VOC	1330207

Gasoline Storage Tanks

District Toxic Profile ID	24
Description	Gasoline Storage Tanks
Source	The emission factors are from the 1995 District memo "Toxic Emissions Inventory Plan Regarding Diesel and Gasoline Storage Weight Fractions"

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	7.00E-03	lb/lb VOC	71432
Toluene	1.00E-02	lb/lb VOC	108883
Xylenes (mixed)	1.00E-02	lb/lb VOC	1330207

Glycol Reboiler EG Uncontrolled

District Toxic Profile ID	232
Description	Glycol Reboiler EG Uncontrolled
Source	Emission factors are from table 19, "Point Source Emission Factors" (Reboiler, Ethylene Glycol row, Mean value, page 171-172, pdf) in CARB's 1999 Volume 1 Part 2, Development Of Toxics Emission Factors From Source Test Data Collected Under The Air Toxics Hot Spots Program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	2.45E-01	lb/MMscf	71432
Ethyl benzene	7.29E-03	lb/MMscf	100414
Formaldehyde	3.79E-05	lb/MMscf	50000
Hydrogen sulfide	5.49E-02	lb/MMscf	7783064
Toluene	1.64E-01	lb/MMscf	108883
Xylenes (mixed)	2.92E-02	lb/MMscf	1330207

Glycol Reboiler TEG Uncontrolled

District Toxic Profile ID	233
Description	Glycol Reboiler TEG Uncontrolled
Source	Emission factors are from table 19, "Point Source Emission Factors" (Reboiler, Triethylene Glycol row, Mean value, page 172) in CARB's 1999 Volume 1 Part 2, Development Of Toxics Emission Factors From Source Test Data Collected Under The Air Toxics Hot Spots Program.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	1.51E-01	lb/MMscf	71432
Ethyl benzene	2.69E-02	lb/MMscf	100414
Formaldehyde	3.50E-05	lb/MMscf	50000
Hydrogen sulfide	4.42E-03	lb/MMscf	7783064
Toluene	1.75E-01	lb/MMscf	108883
Xylenes (mixed)	7.38E-02	lb/MMscf	1330207

NG Heater Treater WSPA 1992

District Toxic Profile ID	238
Description	NG Heater Treater WSPA 1992
Source	Emission factors are from the 1992 Radian Corporation report, Source Test Report for The Texaco Heater Treater, The Mobil Steam Generator, and The Swepi Gas Turbine In the San Joaquin Valley Unified Air Pollution Control District, California prepared for WSPA

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	1.20E-06	lb/MMscf	83329
Acenaphthylene	1.20E-05	lb/MMscf	208968
Acetaldehyde	2.60E-02	lb/MMscf	75070
Acrolein	1.11E-02	lb/MMscf	107028
Anthracene	1.40E-06	lb/MMscf	120127
Benz[a]anthracene	1.00E-06	lb/MMscf	56553
Benzene	1.70E-03	lb/MMscf	71432
Benzo[a]pyrene	5.60E-07	lb/MMscf	50328
Benzo[b]fluoranthene	5.60E-07	lb/MMscf	205992
Benzo[g,h,i]perylene	8.70E-07	lb/MMscf	191242
Benzo[k]fluoranthene	5.60E-07	lb/MMscf	207089
Chrysene	1.00E-06	lb/MMscf	218019
Dibenz[a,h]anthracene	5.60E-07	lb/MMscf	53703
Ethyl benzene	1.10E-03	lb/MMscf	100414
Fluoranthene	1.20E-05	lb/MMscf	206440
Fluorene	4.60E-06	lb/MMscf	86737
Formaldehyde	3.80E-02	lb/MMscf	50000
Indeno[1,2,3-cd]pyrene	5.60E-07	lb/MMscf	193395
Naphthalene	2.37E-04	lb/MMscf	91203
PAHs, total, minus Naphthalene	7.60E-05	lb/MMscf	1151
Phenanthrene	3.40E-05	lb/MMscf	85018
Propylene	4.60E-01	lb/MMscf	115071
Pyrene	5.60E-06	lb/MMscf	129000
Toluene	3.20E-02	lb/MMscf	108883
Xylenes (mixed)	1.90E-02	lb/MMscf	1330207

NG Steam Generators WSPA 1992

District Toxic Profile ID	237
Description	NG Steam Generators WSPA 1992
Source	Emission factors are from the 1992 Radian Corporation report, Source Test Report for The Texaco Heater Treater, The Mobil Steam Generator, and The Swepi Gas Turbine In the San Joaquin Valley Unified Air Pollution Control District, California prepared for WSPA

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	5.40E-07	lb/MMscf	83329
Acenaphthylene	3.70E-07	lb/MMscf	208968
Acetaldehyde	1.40E-02	lb/MMscf	75070
Acrolein	1.40E-02	lb/MMscf	107028
Anthracene	2.40E-06	lb/MMscf	120127
Benz[a]anthracene	1.30E-06	lb/MMscf	56553
Benzene	1.60E-03	lb/MMscf	71432
Benzo[a]pyrene	3.70E-07	lb/MMscf	50328
Benzo[b]fluoranthene	3.70E-07	lb/MMscf	205992
Benzo[g,h,i]perylene	3.70E-07	lb/MMscf	191242
Benzo[k]fluoranthene	3.70E-07	lb/MMscf	207089
Chrysene	1.13E-06	lb/MMscf	218019
Dibenz[a,h]anthracene	3.70E-07	lb/MMscf	53703
Ethyl benzene	1.20E-02	lb/MMscf	100414
Fluoranthene	1.40E-06	lb/MMscf	206440
Fluorene	2.40E-06	lb/MMscf	86737
Formaldehyde	3.30E-02	lb/MMscf	50000
Hydrogen sulfide	1.70E-01	lb/MMscf	7783064
Indeno[1,2,3-cd]pyrene	3.70E-07	lb/MMscf	193395
Naphthalene	1.87E-04	lb/MMscf	91203
PAHs, total, w/o individ. components reported	2.70E-05	lb/MMscf	1151
PAHs, total, with individ. components also reported	2.10E-04	lb/MMscf	1150
Phenanthrene	1.20E-05	lb/MMscf	85018
Propylene	6.00E-01	lb/MMscf	115071
Pyrene	2.00E-06	lb/MMscf	129000
Toluene	2.00E-02	lb/MMscf	108883
Xylenes (mixed)	2.50E-02	lb/MMscf	1330207

Oilfield Equipment Fugitive - District

District Toxic Profile ID	204
Description	Oilfield Equipment Fugitive - District
Source	District Approved Toxic EF for Fugitive emissions. District Policy based on Actual ST in the valley.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	3.50E-03	lbs/lb VOC	71432
Hydrogen sulfide	1.43E-02	lbs/lb VOC	7783064
Toluene	3.40E-03	lbs/lb VOC	108883
Xylenes (mixed)	7.00E-03	lbs/lb VOC	1330207

Oilfield NG-Fired + Waste Gas Flare (Default)

District Toxic Profile ID	219
Description	Oilfield NG-Fired + Waste Gas Flare (Default)
Source	This is a combined emission factor based on default flare parameters of 100% methane, 98% destruction efficiency, and standard mole fractions/specific gravity. * The emission factors are from the flare column in the table, "Natural Gas Fired External Combustion Equipment", in the May 2001 update of VCAPCD AB 2588 Combustion Emission Factors ** The emission factors are derived from Table 1, "Gas analysis from Laboratory Services, Hobbs, New Mexico" (page 19) in the 2005 Report, FINAL REPORT Test of TDA's Direct Oxidation Process for Sulfur Recovery.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.30E-02	lb/mmscf	75070
Acrolein	1.00E-02	lb/mmscf	107028
Benzene	2.97E+00	lb/mmscf	71432
Cyclohexane	2.44E+00	lb/mmscf	110827
Ethyl benzene	1.50E+00	lb/mmscf	100414
Formaldehyde	1.17E+00	lb/mmscf	50000
Hexane	3.94E+00	lb/mmscf	110543
Hydrogen Sulfide	4.66E+00	lb/mmscf	7783064
Naphthalene	1.10E-02	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.4E-02	lb/mmscf	1151
Propylene	2.44	lb/mmscf	115071
Toluene	4.01E-01	lb/mmscf	108883
Xylenes (mixed)	9.43E-02	lb/mmscf	1330207

Petroleum Equipment Natural Gas Condensates

District Toxic Profile ID	249
Description	Petroleum Equipment Natural Gas Condensates
Source	The emission factors are derived from EP Energy's 2015 SDS for Natural Gas Liquids/Condensates.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	2.00E-02	lbs/lb VOC	71432
Cyclohexane	5.00E-02	lbs/lb VOC	110827
Ethyl Benzene	5.00E-02	lbs/lb VOC	100414
Hexane	1.30E-01	lbs/lb VOC	110543
Hydrogen sulfide	1.00E-02	lbs/lb VOC	7783064
Toluene	5.00E-02	lbs/lb VOC	108883
Xylenes (mixed)	5.00E-02	lbs/lb VOC	1330207

Z1 SU Petroleum Process Heaters-Natural Gas & RG

District Toxic Profile ID	53
Description	Z1 SU Petroleum Process Heaters-Natural Gas & RG
Source	The emission factors were taken from the API and WSPA emission source tests (Hansell and England, 1998) see Table D-8a pg. D-22 in (Review Draft) December 2009 Emission Estimation Protocol for Petroleum Refineries

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	1.81E-05	lbs/MMscf	83329
Acenaphthylene	1.72E-04	lbs/MMscf	208968
Acetaldehyde	1.67E-02	lbs/MMscf	75070
Acrolein	2.84E-03	lbs/MMscf	107028
Anthracene	1.43E-05	lbs/MMscf	120127
Benz[a]anthracene	1.67E-05	lbs/MMscf	56553
Benzene	2.44E-02	lbs/MMscf	71432
Benzo[a]pyrene	1.10E-05	lbs/MMscf	50328
Benzo[b]fluoranthene	4.19E-06	lbs/MMscf	205992
Benzo[g,h,i]perylene	9.55E-07	lbs/MMscf	191242
Benzo[k]fluoranthene	3.18E-06	lbs/MMscf	207089
Chrysene	1.24E-06	lbs/MMscf	218019
Dibenz[a,h]anthracene	2.08E-07	lbs/MMscf	53703
Fluoranthene	3.82E-05	lbs/MMscf	206440
Fluorene	1.69E-03	lbs/MMscf	86737
Formaldehyde	8.89E-02	lbs/MMscf	50000
Indeno[1,2,3-cd]pyrene	6.67E-07	lbs/MMscf	193395
Naphthalene	6.18E-03	lbs/MMscf	91203
Phenanthrene	4.30E-04	lbs/MMscf	85018
Phenol	2.08E-03	lbs/MMscf	108952
Propylene	1.38E-02	lbs/MMscf	115071
Pyrene	2.62E-05	lbs/MMscf	129000
Toluene	3.03E-02	lbs/MMscf	108883
Xylenes (mixed)	3.49E-02	lbs/MMscf	1330207
Formaldehyde	1.70E-02	lb/mmscf	50000
Hexane	6.30E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	7.31E-01	lb/mmscf	115071
Toluene	3.66E-02	lb/mmscf	108883
Xylenes (mixed)	2.72E-02	lb/mmscf	1330207

Z1 SU Petroleum Process Heaters-Natural Gas

District Toxic Profile ID	87
Description	Z1 SU Petroleum Process Heaters-Natural Gas
Source	The emission factors were taken from the API and WSPA emission source tests (Hansell and England, 1998) see Table D-7a on pg. D-20 in (Review Draft) December 2009 Emission Estimation Protocol for Petroleum Refineries

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	1.62E-06	lbs/MMscf	83329
Acenaphthylene	3.23E-05	lbs/MMscf	208968
Acetaldehyde	4.82E-03	lbs/MMscf	75070
Acrolein	4.64E-03	lbs/MMscf	107028
Anthracene	1.85E-06	lbs/MMscf	120127
Benz[a]anthracene	1.90E-06	lbs/MMscf	56553
Benzene	3.71E-03	lbs/MMscf	71432
Benzo[a]pyrene	1.18E-06	lbs/MMscf	50328
Benzo[b]fluoranthene	1.18E-06	lbs/MMscf	205992
Benzo[g,h,i]perylene	1.42E-06	lbs/MMscf	191242
Benzo[k]fluoranthene	1.18E-06	lbs/MMscf	207089
Chrysene	1.83E-06	lbs/MMscf	218019
Dibenz[a,h]anthracene	1.18E-06	lbs/MMscf	53703
Ethyl benzene	2.25E-03	lbs/MMscf	100414
Fluoranthene	1.79E-05	lbs/MMscf	206440
Fluorene	5.82E-06	lbs/MMscf	86737
Formaldehyde	5.32E-03	lbs/MMscf	50000
Indeno[1,2,3-cd]pyrene	1.18E-06	lbs/MMscf	193395
Naphthalene	2.80E-04	lbs/MMscf	91203
Phenanthrene	4.74E-05	lbs/MMscf	85018
Propylene	6.13E-01	lbs/MMscf	115071
Pyrene	1.16E-05	lbs/MMscf	129000
Toluene	7.47E-02	lbs/MMscf	108883
Xylenes (mixed)	2.97E-02	lbs/MMscf	1330207
Formaldehyde	1.70E-02	lb/mmscf	50000
Hexane	6.30E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	7.31E-01	lb/mmscf	115071
Toluene	3.66E-02	lb/mmscf	108883
Xylenes (mixed)	2.72E-02	lb/mmscf	1330207

Z1 SU Petroleum Process Heaters-Oil

District Toxic Profile ID	54
Description	Z1 SU Petroleum Process Heaters-Oil
Source	The emission factors were taken from the API and WSPA emission source tests (Hansell and England, 1998) see Table D-9a pg. D-24 in (Review Draft) December 2009 Emission Estimation Protocol for Petroleum Refineries.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,3-Butadiene	2.01E-02	Lbs/1,000 gallons	106990
2-Methylnaphthalene	9.29E-05	Lbs/1,000 gallons	91576
Acenaphthene	2.99E-06	Lbs/1,000 gallons	83329
Acenaphthylene	1.37E-07	Lbs/1,000 gallons	208968
Acetaldehyde	5.48E-04	Lbs/1,000 gallons	75070
Acrolein	6.03E-04	Lbs/1,000 gallons	107028
Anthracene	7.41E-08	Lbs/1,000 gallons	120127
Arsenic	8.62E-04	Lbs/1,000 gallons	7440382
Benz(a)anthracene	1.12E-05	Lbs/1,000 gallons	56553
Benzene	8.74E-03	Lbs/1,000 gallons	71432
Benzo(a)pyrene	1.84E-07	Lbs/1,000 gallons	50328
Benzo(b)fluoranthene	1.15E-06	Lbs/1,000 gallons	205992
Benzo(e)pyrene	7.73E-07	Lbs/1,000 gallons	192972
Benzo(g,h,i)perylene	5.57E-06	Lbs/1,000 gallons	191242
Benzo(k)fluoranthene	6.81E-08	Lbs/1,000 gallons	207089
Beryllium	8.66E-05	Lbs/1,000 gallons	7440417
Cadmium	8.20E-04	Lbs/1,000 gallons	7440439
Chloroform	8.88E-03	Lbs/1,000 gallons	67663
Chromium (total)	2.74E-03	Lbs/1,000 gallons	7440473
Chrysene	2.92E-05	Lbs/1,000 gallons	218019
Copper	4.58E-03	Lbs/1,000 gallons	7440508
Dibenz(a,h)anthracene	5.09E-06	Lbs/1,000 gallons	53703
Dioxin: 4D 2378	5.97E-10	Lbs/1,000 gallons	1746016
Dioxin: 5D 12378	6.57E-09	Lbs/1,000 gallons	40321764
Dioxin: 6D 123478	5.68E-09	Lbs/1,000 gallons	39227286
Dioxin: 6D 123678	8.07E-09	Lbs/1,000 gallons	57653857
Dioxin: 6D 123789	1.34E-08	Lbs/1,000 gallons	19408743
Dioxin: 7D	3.29E-08	Lbs/1,000 gallons	35822469
Dioxin: 8D	5.97E-08	Lbs/1,000 gallons	3268879
Fluoranthene	2.48E-06	Lbs/1,000 gallons	206440
Fluorene	1.67E-04	Lbs/1,000 gallons	86737
Formaldehyde	3.84E-03	Lbs/1,000 gallons	50000
Furan: 4F 2378	2.66E-07	Lbs/1,000 gallons	51207319
Furan: 5F 12378	2.48E-08	Lbs/1,000 gallons	57117416
Furan: 5F 23478	4.48E-08	Lbs/1,000 gallons	57117314
Furan: 6F 123478	5.68E-08	Lbs/1,000 gallons	70648269
Furan: 6F 123678	1.79E-08	Lbs/1,000 gallons	57117449
Furan: 6F 123789	5.97E-10	Lbs/1,000 gallons	72918219
Furan: 6F 234678	2.48E-08	Lbs/1,000 gallons	60851345
Furan: 7F 1234678	5.68E-08	Lbs/1,000 gallons	67562394
Furan: 7F 1234789	2.69E-09	Lbs/1,000 gallons	55673897
Furan: 8F	2.54E-08	Lbs/1,000 gallons	39001020
Hexavalent Chromium	2.90E-04	Lbs/1,000 gallons	18540299
Indeno(1,2,3-cd)pyrene	5.12E-06	Lbs/1,000 gallons	193395
Lead	5.48E-04	Lbs/1,000 gallons	7439921
Manganese	2.22E-03	Lbs/1,000 gallons	7439965
Mercury	2.83E-05	Lbs/1,000 gallons	7439976
Naphthalene	1.11E-03	Lbs/1,000 gallons	91203
Nickel	4.09E-01	Lbs/1,000 gallons	7440020
Perylene	1.66E-07	Lbs/1,000 gallons	198550
Phenanthrene	6.02E-05	Lbs/1,000 gallons	85018

Propylene	1.56E-02	Lbs/1,000 gallons	115071
Pyrene	2.14E-06	Lbs/1,000 gallons	129000
Selenium	6.59E-03	Lbs/1,000 gallons	7782492
Toluene	1.03E-02	Lbs/1,000 gallons	108883
Xylene (total)	1.98E-02	Lbs/1,000 gallons	1330207
Zinc	1.22E-02	Lbs/1,000 gallons	7440666

Z1 SU Petroleum Process Heaters-Refinery Gas

District Toxic Profile ID	52
Description	Z1 SU Petroleum Process Heaters-Refinery Gas
Source	The emission factors were taken from the API and WSPA emission source tests (Hansell and England, 1998) see Table D-11a pg. D-32 in (Review Draft) December 2009 Emission Estimation Protocol for Petroleum Refineries

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	2.30E-06	lbs/MMscf	83329
Acenaphthylene	1.50E-06	lbs/MMscf	208968
Acetaldehyde	2.00E-02	lbs/MMscf	75070
Anthracene	2.80E-06	lbs/MMscf	120127
Antimony	5.80E-04	lbs/MMscf	7440360
Arsenic	9.50E-04	lbs/MMscf	7440382
Barium	6.50E-03	lbs/MMscf	7440393
Benz[a]anthracene	3.70E-05	lbs/MMscf	56553
Benzene	8.40E-02	lbs/MMscf	71432
Benzo[a]pyrene	9.90E-05	lbs/MMscf	50328
Benzo[b]fluoranthene	4.60E-05	lbs/MMscf	205992
Benzo[g,h,i]perylene	1.20E-06	lbs/MMscf	191242
Benzo[k]fluoranthene	2.70E-05	lbs/MMscf	207089
Beryllium	2.90E-04	lbs/MMscf	7440417
Cadmium	1.10E-03	lbs/MMscf	7440439
Chromium	1.20E-03	lbs/MMscf	7440473
Chromium, hexavalent (& compounds)	2.40E-04	lbs/MMscf	18540299
Chrysene	1.70E-06	lbs/MMscf	218019
Copper	4.70E-03	lbs/MMscf	7440508
Dibenz[a,h]anthracene	1.10E-05	lbs/MMscf	53703
Ethyl benzene	3.00E-02	lbs/MMscf	100414
Fluoranthene	3.10E-06	lbs/MMscf	206440
Fluorene	1.10E-05	lbs/MMscf	86737
Formaldehyde	1.50E-01	lbs/MMscf	50000
Hydrogen sulfide	4.10E-01	lbs/MMscf	7783064
Indeno[1,2,3-cd]pyrene	1.20E-04	lbs/MMscf	193395
Lead	5.50E-03	lbs/MMscf	7439921
Manganese	7.70E-03	lbs/MMscf	7439965
Mercury	2.00E-04	lbs/MMscf	7439976
Naphthalene	3.00E-04	lbs/MMscf	91203
Nickel	1.10E-02	lbs/MMscf	7440020
Phenanthrene	1.40E-05	lbs/MMscf	85018
Phenol	7.00E-03	lbs/MMscf	108952
Phosphorus	7.20E-04	lbs/MMscf	7723140
Propylene	2.10E-03	lbs/MMscf	115071
Pyrene	2.80E-06	lbs/MMscf	129000
Selenium	2.20E-05	lbs/MMscf	7782492
Silver	1.80E-03	lbs/MMscf	7440224
Thallium	6.50E-03	lbs/MMscf	7440280
Toluene	1.40E-01	lbs/MMscf	108883
Xylenes (mixed)	3.70E-02	lbs/MMscf	1330207
Zinc	2.30E-02	lbs/MMscf	7440666
Formaldehyde	1.70E-02	lb/mmscf	50000
Hexane	6.30E-03	lb/mmscf	110543
Naphthalene	3.00E-04	lb/mmscf	91203
PAHs, total, w/o individ. components reported	1.00E-04	lb/mmscf	1151
Propylene	7.31E-01	lb/mmscf	115071
Toluene	3.66E-02	lb/mmscf	108883
Xylenes (mixed)	2.72E-02	lb/mmscf	1330207

Z2 EI Glycol Reboiler District

District Toxic Profile ID	260
Description	Z2 EI Glycol Reboiler District
Source	Emission Factors are derived from the 1995 Tech Services Glycol Reboiler Emission Factor memo. Test data from 1992 ARCO Glycol Reboiler source tests.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	1.08E-01	lbs/MMscf	71432
Ethyl benzene	7.21E-02	lbs/MMscf	100414
Hydrogen sulfide	6.31E-03	lbs/MMscf	7783064
Toluene	2.98E-02	lbs/MMscf	108883
Xylenes (mixed)	1.05E-03	lbs/MMscf	1330207

Z2 EI Jet Kerosene

District Toxic Profile ID	272
Description	Z2 EI Jet Kerosene
Source	Emission factors derived from the speciation in the EPA's TANKs program 4.0.9d (2007)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	4.00E-05	lb/lb VOC	71432
Ethylbenzene	1.27E-03	lb/lb VOC	100414
Hexane	5.00E-05	lb/lb VOC	110543
Toluene	1.33E-03	lb/lb VOC	108883
Xylenes (mixed)	3.10E-03	lb/lb VOC	1330207

Z2 EI Jet Naphtha (JP-4)

District Toxic Profile ID	273
Description	Z2 EI Jet Naphtha (JP-4)
Source	Emission factors derived from the speciation in the EPA's TANKs program 4.0.9d (2007)

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Benzene	6.00E-03	lb/lb VOC	71432
Cyclohexane	1.20E-02	lb/lb VOC	110827
Ethylbenzene	5.00E-03	lb/lb VOC	100414
Hexane	1.50E-02	lb/lb VOC	110543
Isopropyl Benzene	2.00E-03	lb/lb VOC	98828
Toluene	2.00E-02	lb/lb VOC	108883
Xylenes (mixed)	2.50E-02	lb/lb VOC	1330207

Z2 EI Natural Gas Turbines WSPA 1992

District Toxic Profile ID	255
Description	Z2 EI Natural Gas Turbines WSPA 1992
Source	The emission factors were derived from data in the 1992 Radian Corporation report to WSPA. Data was based on source tests in the San Joaquin Valley.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acenaphthene	5.00E-06	lbs/MMscf	83329
Acenaphthylene	1.90E-06	lbs/MMscf	208968
Acetaldehyde	3.90E-02	lbs/MMscf	75070
Acrolein	3.90E-02	lbs/MMscf	107028
Anthracene	1.60E-05	lbs/MMscf	120127
Benz[a]anthracene	2.90E-06	lbs/MMscf	56553
Benzene	3.50E-03	lbs/MMscf	71432
Benzo[a]pyrene	1.50E-06	lbs/MMscf	50328
Benzo[b]fluoranthene	1.50E-06	lbs/MMscf	205992
Benzo[g,h,i]perylene	1.50E-06	lbs/MMscf	191242
Benzo[k]fluoranthene	1.50E-06	lbs/MMscf	207089
Chrysene	3.70E-06	lbs/MMscf	218019
Dibenz[a,h]anthracene	1.50E-06	lbs/MMscf	53703
Ethyl benzene	4.80E-03	lbs/MMscf	100414
Fluoranthene	1.00E-05	lbs/MMscf	206440
Fluorene	1.90E-05	lbs/MMscf	86737
Formaldehyde	1.30E-01	lbs/MMscf	50000
Indeno[1,2,3-cd]pyrene	1.50E-06	lbs/MMscf	193395
Naphthalene	5.82E-04	lbs/MMscf	91203
PAHs, total, w/o individ. components reported	1.70E-04	lbs/MMscf	1151
Phenanthrene	9.20E-05	lbs/MMscf	85018
Propylene	1.60E+00	lbs/MMscf	115071
Pyrene	1.20E-05	lbs/MMscf	129000
Toluene	1.70E-02	lbs/MMscf	108883
Xylenes (mixed)	2.80E-02	lbs/MMscf	1330207

Z2 EI FWKO Stock Tank VOC

District Toxic Profile ID	259
Description	Z2 EI FWKO Stock Tank VOC
Source	The emission factors are from the 1990 Texaco, Kern County TEIR. AB2588 Purposes only.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Ammonia	9.04E-05	lb/lb VOC	7664417
Benzene	2.06E-04	lb/lb VOC	71432
Chlorobenzene	2.84E-03	lb/lb VOC	108907
Dichlorobenzenes (mixed isomers)	3.48E-04	lb/lb VOC	25321226
Hydrogen sulfide	1.29E+00	lb/lb VOC	7783064
Methanol	1.69E-04	lb/lb VOC	67561
Naphthalene	6.75E-05	lb/lb VOC	91203
Toluene	2.42E-07	lb/lb VOC	108883
Xylenes (mixed)	3.35E-03	lb/lb VOC	1330207

Z2 EI Refinery Gas Heater AB2588 1992

District Toxic Profile ID	286
Description	Z2 EI Refinery Gas Heater AB2588 1992
Source	*The emission factors were derived from 1992 source test data from the AB2588 program for S33. Only use for facilities that have used this profile previously for AB2588.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
1,2 Butadiene	8.86E-03	lb/MMscf	106990
Acetaldehyde	2.19E-02	lb/MMscf	75070
Acrolein	3.15E-02	lb/MMscf	107028
Anthracene	1.53E-06	lb/MMscf	120127
Arsenic	2.01E-03	lb/MMscf	7440382
Benzene	2.56E-03	lb/MMscf	71432
Benzo[a]pyrene	1.53E-06	lb/MMscf	50328
Benzo[b]fluoranthene	1.53E-06	lb/MMscf	205992
Benzo[k]fluoranthene	1.53E-06	lb/MMscf	207089
Berryllium	6.31E-05	lb/MMscf	7440417
Cadmium	4.69E-03	lb/MMscf	7440439
Chomium, Hexavalent	9.31E-05	lb/MMscf	18540299
Chrysene	1.53E-06	lb/MMscf	218019
Dibenz[a,h]anthracene	1.53E-06	lb/MMscf	53703
Ethyl benzene	3.48E-03	lb/MMscf	100414
Formaldehyde	1.59E-02	lb/MMscf	50000
Hydrogen Sulfide	1.12E-02	lb/MMscf	7783064
Indeno[1,2,3-cd]pyrene	1.53E-06	lb/MMscf	193395
Lead	1.34E-03	lb/MMscf	7439921
Manganese	1.04E-03	lb/MMscf	7439965
Mercury	1.94E-03	lb/MMscf	7439976
Naphthalene	7.92E-04	lb/MMscf	91203
Nickel	4.78E-04	lb/MMscf	7440020
PAHs, total	9.63E-04	lb/MMscf	1151
Propylene	6.89E-02	lb/MMscf	115071
Selenium	8.54E-03	lb/MMscf	7782492
Toluene	3.02E-03	lb/MMscf	108883
Xylenes (mixed)	1.48E-01	lb/MMscf	1330207
Zinc	2.55E-02	lb/MMscf	7440666

Z2 EI WEMCO Unit VOC

District Toxic Profile ID	258
Description	Z2 EI WEMCO Unit VOC
Source	The emission factors are from the 1990 Texaco, Kern County TEIR. AB2588 Purposes only.

Pollutant Name	Emission Factor	Emission Factor Units	CAS#
Acetaldehyde	4.07E-04	lb/lb VOC	75070
Acrolein	4.85E-05	lb/lb VOC	107028
Ammonia	5.89E-02	lb/lb VOC	7664417
Benzene	1.28E-01	lb/lb VOC	71432
Chlorobenzene	5.84E-02	lb/lb VOC	108907
Dichlorobenzenes (mixed isomers)	3.18E-02	lb/lb VOC	25321226
Formaldehyde	8.18E-04	lb/lb VOC	50000
Glutaraldehyde	7.44E-04	lb/lb VOC	111308
Hydrogen sulfide	1.39E+02	lb/lb VOC	7783064
Methanol	1.38E-01	lb/lb VOC	67561
Naphthalene	5.54E-02	lb/lb VOC	91203
Toluene	1.35E-01	lb/lb VOC	108883
Xylenes (mixed)	1.17E-01	lb/lb VOC	1330207

Source Testing

One of the requirements of an AB 2588 Hot Spots Toxics Emissions Inventory Plan (TEIP) is to include identification and quantification methods of listed toxic substances being emitted.[1]

Source testing may be required for certain sources, which are identified in Appendix D of CARB's *Emission Inventory Criteria and Guidelines Report (EIC&GR)*. Options to fulfill this requirement include:[2]

1. Complete source testing in accordance with ARB-adopted source test methods

2. Propose sampling and analysis methods that are substantially equivalent to ARB-adopted source test methods

3. Use existing source test data from the facility if 1) all conditions affecting emissions of listed substances are substantially the same, and 2) existing source test methods are equivalent to ARB-adopted test methods

4. Complete pooled source testing
    i. A group of related facilities may perform representative source tests to apply to their respective facilities
    ii. Utilize only if there is sufficient similarity in all emissions parameters between the facility tested and the facility applied to

5. Propose an alternative method to quantify emissions that provides the best technologically feasible characterization
    i. Must result in a characterization that is as accurate as that achieved by the ARB-adopted source test method
    ii. Utilize this alternative if physical circumstances at the facility do not allow for the ARB-adopted source test method

6. Utilize ARB-approved emission factors from the California Air Toxics Emission Factors (CATEF) database, (subject to additional conditions)

[1] Section VI of the *EIC&GR: Requirements for Preparing Emission Inventory Plans*

[2] Refer to Section IX and Appendix D of the *EIC&GR* for more details regarding source testing. The methods used to conduct source tests must be approved in advance by the District.

Quantification Methods

When source testing is not required, emissions can be calculated using the best method to account for conditions of the emitting process.[3] Some quantification methods include:

1. Emission factors. Emission factors are ratios that relate emissions of a pollutant to an activity level at a facility that can be easily measured, such as an amount of material processed, or an amount of fuel used. Given an emission factor and a known activity level, a simple multiplication yields an estimate of the emissions.[4]

2. Mass balance. Mass balance is a method for estimating emissions that attempts to account for all the inputs and outputs of a given pollutant. If inputs of a material to a given process are known and all outputs except for air emissions can be reasonably well quantified, then the remainder can be assumed to be an estimate of the amount lost to the atmosphere for the process.

3. Engineering estimate. Engineering estimate is a term commonly applied to the best approximation that can be made when the specific emission estimation techniques such as source testing, use of emission factors, or mass balance are not possible. This estimation is based on principles of chemistry, physics, and available source specific information.

4. Speciation profiles. Speciation profiles are listings of the proportional chemical composition of Total Organic Gas (TOG) or Particulate Matter (PM) from a device or process. Note, one of the above techniques will be needed to first estimate emissions of TOG or PM.

[3] Refer to Section VIII.E and Appendix A-I of the *EIC&GR* for more information regarding Applicable Degree of Accuracy requirements for emission quantification.

[4] District "Hot Spots" Emission Factors & Speciation Profiles; California Air Toxics Emission Factors (CATEF) database; EPA AP-42