

January 6, 2023

AB 2588 “Hot Spots” Air Toxics Profiles



***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.

The toxic profiles listed this document may be located via the Table of Contents below one of two ways: 1) By the “Numerical Profile List” or 2) by Source category.

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| 40 | [Agricultural Dust](#_Agricultural_Dust) |
| 49 | [Z1 SU Digester Gas ICE (Farm Waste, Not Dairy)](#_Sewage_Gas_Internal) |
| 50 | [Z1 SU Fuel Oil #6 External Combustion](#_Z1_SU_Fuel_1) |
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| 115 | [Biosolids Composting](#_Biosolids_Composting_1) |
| 122 | [Z3 FS VOC's Composting- Greenwaste/Biosolid](#_Z3_FS_VOC's_1) |
| 130 | [Z1 SU Digester Gas Turbine(Farm Waste and WW)](#_Z1_SU_Digester_1) |
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| 171 | [Asphalt Batch Plant Drum Mix HM Waste Oil](#_Asphalt_Batch_Plant_4) |
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| 176 | [Gasoline-Fired Portable Catalyst ICE](#_Gasoline-Fired_Portable_Catalyst) |
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| 209 | [Feed Pelleting, Milling, Loadout lb](#_Dairy,_Feedlot,_Livestock) |
| 210 | [Feed Receiving lb](#_Feed_Receiving_lb) |
| 211 | [Flour Mill Receiving lb](#_Flour_Mill_Receiving_1) |
| 212 | [Flour Mill Loadout lb](#_Flour_Mill_Receiving) |
| 213 | [Grain Elevator Receiving lb](#_Grain_Elevator_Receiving_1) |
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| 215 | [Landfill Fugitives VOC](#_Landfill_Fugitives_VOC_2) |
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| 230 | [Digester Gas External Comb (Farm waste, not Dairy)](#_Digester_Gas_External) |
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| 257 | [Asphalt Concrete w/o Rubber VOC Emissions](#_Asphalt_Concrete_w/o) |
| 258 | [Z2 EI WEMCO Unit VOC](#_Z2_EI_WEMCO) |
| 259 | [Z2 EI FWKO Stock Tank VOC](#_Z2_EI_FWKO) |
| 260 | [Z2 EI Glycol Reboiler District](#_Z2_EI_Glycol_1) |
| 265 | [Z2 EI Landfill Fugitive Co-Disposal 1998 AP42](#_Z2_EI_Peanut) |
| 266 | [Z2 EI Landfill Fugitive 1998 AP42](#_Z2_EI_Landfill_1) |
| 267 | [Z2 EI Landfill Fugitive Co-Disposal WIAC](#_Z2_EI_Landfill_2) |
| 268 | [Z2 EI Landfill Fugitive WIAC](#_Z2_EI_Landfill_3) |
| 270 | [Red Wine Fermentation VOC](#_Red_Wine_Fermentation) |
| 271 | [White Wine Fermentation VOC](#_White_Wine_Fermentation) |
| 272 | [Z2 EI Jet Kerosene](#_Z2_EI_Jet) |
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| 284 | [Concrete California Default](#_Concrete_California_Default) |
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| 287 | [Z1 SU Road Dust CATEF](#_Z1_SU_Road) |
| 288 | [Z2 EI Peanut Oil Roaster](#_Z2_EI_Peanut_1) |
| 289 | [Recycled Asphalt and Road Concrete WC](#_Recycled_Asphalt_and) |
| 290 | [Z2 EI Polypropylene](#_Z2_EI_Polypropylene) |
| 291 | [Z1 SU Asphalt Blowing with Blow Cycle no ctrl](#_Z1_SU_Asphalt_3) |
| 292 | [Z1 SU Asphalt Blowing without Blow Cycle no ctrl](#_Z1_SU_Asphalt_4) |
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| 424 | [Z1 SU Gasoline Dispensing Op VOC Liquid Speciation](#_Z1_SU_Emissions) |

# 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](#Footnote1)

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](#Footnote4)

* 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
     1. A group of related facilities may perform representative source tests to apply to their respective facilities
     2. 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
     1. Must result in a characterization that is as accurate as that achieved by the ARB-adopted source test method
     2. 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*](http://www.arb.ca.gov/ab2588/2588guid.htm)*: Requirements for Preparing Emission Inventory Plans*

2 Refer to Section IX and Appendix D of the [*EIC&GR*](http://www.arb.ca.gov/ab2588/2588guid.htm) 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](#Footnote2) 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](#Footnote2)
2. Mass balance. Mass balanceis 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*](http://www.arb.ca.gov/ab2588/2588guid.htm) for more information regarding Applicable Degree of Accuracy requirements for emission quantification.

4 [District](http://www.valleyair.org/busind/pto/toxics.htm) "Hot Spots" Emission Factors & Speciation Profiles; California Air Toxics Emission Factors ([CATEF](https://www.arb.ca.gov/ei/catef/catef.htm)) database; [EPA AP-42](https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors)