

For calculation methodologies, pollutant mass emissions were calculated using the following equation on a 12-month rolling total basis (for NO<sub>x</sub>, SO<sub>2</sub>, VOC [minus the printing press VOCs], CO, and PM [minus unpaved roads vehicle miles traveled]):

$$E = \sum_{i=1}^{12} \frac{EF \cdot P_i}{K}$$

where,

- E = Emissions in tons/year;
- Σ = Symbol representing "summation of";
- i = Month, beginning with the most recent, summing for 12 preceding, consecutive calendar months;
- EF = Pollutant emissions factor (see review report emission factor attachment);
- P = Process production or parameter (see Condition 21);
- K = Conversion factor of 2000 pounds per 1 ton.

Emissions from printing press raw materials assume 100% of VOCs are emitted to the atmosphere. VOC emissions are calculated using records of all materials containing VOCs and the following formula:

$$E = \sum_{i=1}^{12} \frac{RM_i \cdot D \cdot W\%}{K}$$

where,

- E = VOC emissions in tons per year;
- Σ = Symbol representing "summation of";
- RM = Raw material usage in gallons per month;
- i = Month, beginning with the most recent, summing for 12 preceding, consecutive calendar months;
- D = Density of each raw material used in pounds per gallon as obtained from the SDS;
- W% = VOC content of raw material by weight percent as obtained from the SDS;
- K = Conversion factor of 2000 pounds per 1 ton.

Particulate matter from unpaved roads and parking lots are calculated using the following formula:

$$E = \frac{k (s/12)^a (S/30)^d}{(M/0.5)^c} - C \quad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

- E = size-specific emission factor (lb/VMT)
- s = surface material silt content (%)
- W = mean vehicle weight (tons)
- M = surface material moisture content (%)
- S = mean vehicle speed (mph)
- C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

Greenhouse Gas CO2 metric tons are calculated using DEQ's calculator, which incorporates fuel type and usage from our permitted stationary emission units:

This sheet calculates greenhouse gas emissions from fuel combustion.

1) Enter the combustion emission sources at the facility (e.g. "boiler 1") in the 1<sup>st</sup> column.

2) In the 2<sup>nd</sup> column, select the fuel type used in each emissions unit. If more than one fuel type was used in a single emissions unit, you must enter that same emissions unit on multiple rows and then enter the different fuel types in each row.

3) Enter the unit of measurement for each emissions unit. If more than one unit was used in a single emissions unit, then calculate the equivalent (metric tons) for each unit type and unit.

Enter emissions information				Convert to mmBtu				Emissions (kg/mmBtu)			CO <sub>2</sub> Equivalent (metric tons)	
Emissions unit <sup>1</sup>	Fuel Type <sup>2</sup>	Quantity <sup>3</sup>	Fuel units <sup>3</sup>	HHV Units	HHV Unit	HHV	mmBtu	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CO <sub>2</sub>
Boiler 1	Natural gas	1,634,973.00	Therms	159,354,094	cubic ft	0.001026	163,497	0	53	0	25	1
Boiler 1	Distillate oil 2	193.00	Gallon	193	gallon	0.138	27	0	74	0	25	1
Boiler 2	Natural gas	2,360,535.00	Therms	230,071,637	cubic ft	0.001026	236,054	0	53	0	25	1
Boiler 2	Distillate oil 2	321.00	Gallon	321	gallon	0.138	44	0	74	0	25	1
CTG	Natural gas	6,511.00	Therms	634,600	cubic ft	0.001026	651	0	53	0	25	1
CTG	Distillate oil 2	2,145.00	Gallon	2,145	gallon	0.138	296	0	74	0	25	1
HRSG	Natural gas	340.00	Therms	33,138	cubic ft	0.001026	34	0	53	0	25	1
Smaller boilers	Natural gas	209,754.00	Therms	20,443,860	cubic ft	0.001026	20,975	0	53	0	25	1
EG's	Natural gas	743.00	Therms	72,417	cubic ft	0.001026	74	0	53	0	25	1
EG's	Distillate oil 2	11,265.00	Gallon	11,265	gallon	0.138	1,555	0	74	0	25	1
EG's	Propane (liquid)	39.00	Gallon	39	gallon	0.091	4	0	63	0	25	1

Let me know if there's any other information that would be helpful,