

N05-A01 - LANDFILL GAS DEFAULT COMPOSITION (NO CO-DISPOSAL)

CALCULATION METHODS

N05-A01 - VOC Fugitive Emissions:

Landfill Gas Collection Efficiency (E) = Amount of Gas Collected Gc / Total Amount of Gas Generated Gt

$$Gr = Gt - Gc$$

$$Gr = Gt - Gc = (Gc/E) - Gc$$

$$Ea = Gr \times Ci \times MWi / (10^6 \times R)$$

$$Eh = Ea / (\text{days/year} \times \text{hours/day})$$

Where:

Ea = Annual emissions of each contaminant (i), (lbs/yr)

Eh = Maximum hourly emissions of each contaminant, (lbs/hr)

E = Collection efficiency of landfill gas collection system.

Gc: Landfill gas collected by the collection system and routed to landfill disposal site (SCFH or SCFD or SCFY), (ft3/yr)

Gt: Total landfill gas generated (SCFH or SCFD or SCFY), (ft3/yr)

Gr: Landfill gas released through the landfill surface (SCFH or SCFD or SCFY), (ft3/yr)

Ci = Concentration of each listed substance (i) in the landfill gas, (ppmv)

MWi = Molecular weight of each listed substance (i) in the landfill gas, (lbs/lbmole)

R = Gas Constant: 0.7303 atm*ft3/Lbmol*R

@ 1 atm, Temp (68F = 527.67R)

R = 0.7303 (atm*ft3/Lbmol*R) / 1 (atm) x 527.67 (R)

R = 385.36 ≈ 385 (ft3/Lbmol)

Notes:

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.
- The TOG factor is based on an average 40% methane content in the raw gas and an assumed 99.9% DRE.
- The ROG factor is based on the EPA AP-42 assumption of 595 ppmv NMHC as hexane in the raw gas.
- Individual pollutant factors are estimated using AP-42 raw gas speciation (9/97) .

POLLUTANT	DISTRICT EMISSION FACTORS (ppmv)	EPA REFERENCE DOCUMENT	EPA-FACTOR	(UNITS)	COMMENTS
NOX					
CO	141.00	AP-42, Sect.2.4, 9/97, Table 2.4-1	141.00	ppmv	
SOX					
TOG	400000.00			ppmv	ASSUMES 40% AVERAGE METHANE CONTENT OF LANDFILL GAS.
ROG	595.00	AP-42, Sect.2.4, 9/97, Table 2.4-2	595.00	ppmv as hexane	
ACETONE	7.01	AP-42, Sect.2.4, 9/97, Table 2.4-1	7.01	ppmv	
ACRYLONITRILE	6.33	AP-42, Sect.2.4, 9/97, Table 2.4-1	6.33	ppmv	

POLLUTANT	DISTRICT EMISSION FACTORS (ppmv)	EPA REFERENCE DOCUMENT	EPA-FACTOR	(UNITS)	COMMENTS
BENZENE	1.91	AP-42, Sect.2.4, 9/97, Table 2.4-1	1.91	ppmv	
CARBON DISULFIDE	0.58	AP-42, Sect.2.4, 9/97, Table 2.4-1		ppmv	
CARBONYL SULFIDE	0.49	AP-42, Sect.2.4, 9/97, Table 2.4-1		ppmv	
CHLOROBENZENE	0.25	AP-42, Sect.2.4, 9/97, Table 2.4-1	0.25	ppmv	
CHLOROFORM	0.03	AP-42, Sect.2.4, 9/97, Table 2.4-1	0.03	ppmv	
CHLORODIFLUOROMETHANE	1.30	AP-42, Sect.2.4, 9/97, Table 2.4-1	1.30	ppmv	This pollutant is represented as Chlorofluorocarbons in the online reporting system
1,1-DICHLOROETHANE	2.35	AP-42, Sect.2.4, 9/97, Table 2.4-1	2.35	ppmv	
DIMETHYL SULFIDE	7.82	AP-42, Sect.2.4, 9/97, Table 2.4-1	7.82	ppmv	
ETHYL BENZENE	4.61	AP-42, Sect.2.4, 9/97, Table 2.4-1	4.61	ppmv	
ETHYLENE DIBROMIDE					NO VALUE REPORTED IN THE REVISED AP-42 (9/97).
ETHYLENE DICHLORIDE	0.41	AP-42, Sect.2.4, 9/97, Table 2.4-1	0.41	ppmv	
HEXANE	6.57	AP-42, Sect.2.4, 9/97, Table 2.4-1	6.57	ppmv	
HYDROGEN SULFIDE	35.50	AP-42, Sect.2.4, 9/97, Table 2.4-1	35.50	ppmv	
METHYLENE CHLORIDE	14.30	AP-42, Sect.2.4, 9/97, Table 2.4-1	14.3	ppmv	
METHYL ISOBUTYL KETONE	1.87	AP-42, Sect.2.4, 9/97, Table 2.4-1	1.87	ppmv	
METHYL ETHYL KETONE	7.09	AP-42, Sect.2.4, 9/97, Table 2.4-1	7.09	ppmv	
PERCHLOROETHYLENE	3.73	AP-42, Sect.2.4, 9/97, Table 2.4-1	3.73	ppmv	
TOLUENE	39.30	AP-42, Sect.2.4, 9/97, Table 2.4-1	39.30	ppmv	
1,1,1-TRICHLOROETHANE	0.48	AP-42, Sect.2.4, 9/97, Table 2.4-1	0.48	ppmv	
TRICHLOROETHYLENE	2.82	AP-42, Sect.2.4, 9/97, Table 2.4-1	2.82	ppmv	
VINYL CHLORIDE	7.34	AP-42, Sect.2.4, 9/97, Table 2.4-1	7.34	ppmv	
VINYLDENE CHLORIDE	0.20	AP-42, Sect.2.4, 9/97, Table 2.4-1	0.20	ppmv	
XYLENES	12.10	AP-42, Sect.2.4, 9/97, Table 2.4-1	12.10	ppmv	

Last Updated on Feb 2025 by B. Wong