

E09 - ENGINE, DIGESTER GAS FIRED

CALCULATION METHODS	Annual Emissions: $E_a = U_a \times EF$ (lbs/mmft ³)
	Hourly Emissions: $E_h = U_h$ (scfm) x (60/1000000) x EF (lbs/mmft ³)

NOTES:

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.
- No particulate speciation table exists for digester gas combustion. The HCl factor has been estimated using chlorine content of raw gas.
- Emission factors for NO_x, CO, and TOG are based on uncontrolled 2 cycle lean burn engine (AP-42) adjusted for the BTU content of digester gas as per AP-42 instructions (600 / 1000).
- The ROG factor is based on the speciation table which assumes the TOG content in the exhaust gas is composed of 52% CH₄.
- Individual pollutant factors are estimated using the Pt Loma raw gas speciation (1996) and an assumed 98% destruction efficiency.

POLLUTANT	DISTRICT EMISSION FACTORS (lbs/ million ft ³ fuel burned)	EPA REFERENCE DOCUMENT	EPA-FACTOR	(UNITS)	COMMENTS
NOX	1620	AP-42, Sect.3.2,10/96, Table 3.2- 1		lbs/million BTU	
CO	228	AP-42, Sect.3.2,10/96, Table 3.2- 1		lbs/million BTU	
SOX	2	AP-42, Section 3.1, 10/96, Table 3.1-1,			Based on Pt Loma raw gas sulfur content and a 98% conversion to SO _x .
TOG	162	AP-42, Sect.3.2,10/96, Table 3.2- 1		lbs/million BTU	
ROG	77.76				No ROG data in AP-42. Sect. 1.4, Table 1.4-3 for this size boiler.
TSP	27.6	AP-42, Sect.3.2,10/96, Table 3.2- 2		lbs/million BTU	
PM10	27.6	AP-42, Sect.3.2,10/96, Table 3.2- 2			
ACETONE	0.0007		100.00%	lbs/lb TSP	Assumes PM10 = TSP per EPA instructions.
AMMONIA	0.0048				Based on Pt Loma raw gas content with a 98% DRE.
ARSENIC		District's Approved Emission Factors		lb/MMscf	Landfills Operations, Sec 3.3.1
BENZENE	0.1782	PA VOC Speciation Profile # 1001 1/9	0.11%	lbs/lb TOC	
1,3-BUTADIENE					

POLLUTANT	DISTRICT EMISSION FACTORS (lbs/ million ft ³ fuel burned)	EPA REFERENCE DOCUMENT	EPA-FACTOR	(UNITS)	COMMENTS
CARBON TETRACHLORIDE					
CHLORINE					
CHLOROBENZENE	0.0002				Based on Pt Loma raw gas content with a 98% DRE.
CHLOROFORM					
CHLOROFLUORO-CARBONS					
DICHLOROBENZENE	0.0018				Based on Pt Loma raw gas content with a 98% DRE.
ETHYL BENZENE	0.001				Based on Pt Loma raw gas content with a 98% DRE.
ETHYLENE DIBROMIDE					
ETHYLENE DICHLORIDE	0.0014				Based on Pt Loma raw gas content with a 98% DRE.
FORMALDEHYDE	0.135*	EPA VOC Speciation Profile # 1001 1/90.	0.81%	lbs/lb TOC	* When available, District's Approved Emission Factors will be used, Ref: Landfills Operations, Sec 3.3.2
HEXANE	0.0648	EPA VOC Speciation Profile # 1001 1/90	0.04%	lbs/lb TOC	
HYDROGEN CHLORIDE	0.6455				Based on Pt Loma raw gas content with a 98% DRE.
HYDROGEN SULFIDE	0.0215				Based on Pt Loma raw gas content with a 98% DRE.
ISOPROPANOL					
METHANOL					
METHYLENE CHLORIDE	0.0001				Based on Pt Loma raw gas content with a 98% DRE.
METHYL ETHYL KETONE	0.0001				Based on Pt Loma raw gas content with a 98% DRE.
PERCHLOROETHYLENE	0.0005				
PROPYLENE					
TOLUENE	0.0648	EPA VOC Speciation Profile # 1001 1/90	0.04%	lbs/lb TOC	
1,1,1-TRICHLOROETHANE	0.0001				Based on Pt Loma raw gas content with a 98% DRE.
TRICHLOROETHYLENE	0.0003				
VINYL CHLORIDE					
VINYLDENE CHLORIDE					
XYLENES	0.0045				Based on Pt Loma raw gas content with a 98% DRE.