

49-0127 EM Resources Calculations
September 26, 2022

Transloader #1

Allowable PM Emission Calculations

Table 2 1200-03-07-.03(1)
100,000 lb/hr PWR
 $17.31(100,000/2,000)0.16 = 17.31$ (50) 0.16 = 32.3 lb/hr allowable
1200-03-07-.04 (1) 0.02 gr/dscf
 $2,000 \text{ dscfm} \times 60 \text{ min/hr} \times 0.02 \text{ gr/dscf} \times 1 \text{ lb/7,000 grains} = 0.342 \text{ lb/hr}$
1200-03-07-.04 (2) 0.25 gr/dscf
 $2,000 \text{ dscfm} \times 60 \text{ min/hr} \times 0.25 \text{ gr/dscf} \times 1 \text{ lb/7,000 grains} = 4.29 \text{ lb/hr}$
The overriding allowable limit is 0.25 gr/dscf at 4.29 lb/hr
4.29 lb/hr x 8760 hr/yr = 18.8 tons allowable PM/yr

PM Emission Calculations

Controlled PM AP-42 Table 11.12-2 Emission factors for Concrete Batching
Cement supplement unloading to elevated storage silo – pneumatic:
0.0089 lb/ton
50 TPH max x 0.0089 lb/ton = 0.445 lb/hr max controlled actual
0.445 lb/hr PM x 8760 hr/yr = 1.95 tpy max controlled actual

HAP Calculations

Total HAPs: 2.25×10^{-4} lb/hr (see Table 1 – EM Resources LLC)
maximum single HAP- Phosphorus at 8.85×10^{-5} lb/hr (see Table 1 – EM Resources LLC)
 $2.25 \times 10^{-4} \text{ lb/hr Total HAP} \times 8760 \text{ hrs/yr} = 9.9 \times 10^{-4} \text{ tons /yr}$
 $8.85 \times 10^{-5} \text{ lb/hr Phosphorus} \times 8760 \text{ hrs/yr} = 3.9 \times 10^{-4} \text{ tons /yr}$

Transloader #2

Table 2 1200-03-07-.03(1)
100,000 lb/hr PWR
 $17.31(100,000/2,000)0.16 = 17.31$ (50) 0.16 = 32.3 lb/hr allowable
1200-03-07-.04 (1) 0.02 gr/dscf
 $2,000 \text{ dscfm} \times 60 \text{ min/hr} \times 0.02 \text{ gr/dscf} \times 1 \text{ lb/7,000 grains} = 0.342 \text{ lb/hr}$
1200-03-07-.04 (2) 0.25 gr/dscf
 $2,000 \text{ dscfm} \times 60 \text{ min/hr} \times 0.25 \text{ gr/dscf} \times 1 \text{ lb/7,000 grains} = 4.29 \text{ lb/hr}$
The overriding allowable limit is 0.25 gr/dscf at 4.29 lb/hr
4.29 lb/hr x 8760 hr/yr = 18.8 tons allowable PM/yr

Actual PM Emission Calculations

Controlled PM AP-42 Table 11.12-2 Emission factors for Concrete Batching
Cement supplement unloading to elevated storage silo – pneumatic:
0.0089 lb/ton
50 TPH max x 0.0089 lb/ton = 0.445 lb/hr max controlled actual
0.445 lb/hr PM x 8760 hr/yr = 1.95 tpy max controlled actual

HAP Calculations

Total HAPs: 2.25×10^{-4} lb/hr (see Table 1 – EM Resources LLC)
maximum single HAP- Phosphorus at 8.85×10^{-5} lb/hr (see Table 1 – EM Resources LLC)
 $2.25 \times 10^{-4} \text{ lb/hr Total HAP} \times 8760 \text{ hrs/yr} = 9.9 \times 10^{-4} \text{ tons /yr}$
 $8.85 \times 10^{-5} \text{ lb/hr Phosphorus} \times 8760 \text{ hrs/yr} = 3.9 \times 10^{-4} \text{ tons /yr}$

Calculations from August 8, 2022 application

TABLE 1
EM RESOURCES LLC
GORMAN WOODYARD FACILITY
EMISSIONS ASSOCIATED WITH 1 RAILCAR LOADER

Source: Vol 1, 5th Ed., AP-42, Table 11.12-2 & 11.12-8 (June 2006)

Emission Source	Process Rate		Constituent	Emission Factor lb/ton	Controlled Emissions	
	Short-term ton/hr	Annual ton/yr			Short-term (lb/hr)	Annual (ton/yr)
Railcar Loading	50	40,000	PM	0.0089	0.445	0.178
			PM ₁₀	0.0049	0.245	0.098
			PM _{2.5}	0.0049	0.245	0.098
			Arsenic	5.02E-07	2.51E-05	1.00E-05
			Beryllium	4.52E-08	2.26E-06	9.04E-07
			Cadmium	9.93E-09	4.96E-07	1.98E-07
			Total Chromium	6.10E-07	3.05E-05	1.22E-05
			Lead	2.60E-07	1.30E-05	5.20E-06
			Manganese	1.28E-07	6.40E-06	2.56E-06
			Nickel	1.14E-06	5.70E-05	2.28E-05
			Total Phosphorus	1.77E-06	8.85E-05	3.54E-05
Selenium	3.62E-08	1.81E-06	7.24E-07			
Total HAPs =				2.25E-04	9.00E-05	