EVALUATION OF READY-MIX CONCRETE EMISSIONS
Date: July 2, 2020

AP-42 Table 11.12-5 - Plant Wide Emission Factors per Yard of Truck Mix Concrete

Truck Mix Concrete Processes	January 2012			
	Uncontrolled		Controlled	
	PM (lb/yd^3)	PM_{10} (lb/yd^3)	PM (lb/yd^3)	PM_{10} (lb/yd^3)
Aggregate to ground	0.0064	0.0031	0.0064	0.0031
Sand delivery to ground	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to conveyor	0.0064	0.0031	0.0064	0.0031
Sand transfer to conveyor	0.0015	0.0007	0.0015	0.0007
Aggregate transfer to elevated storage	0.0064	0.0031	0.0064	0.0031
Sand transfer to elevated storage	0.0015	0.0007	0.0015	0.0007
Cement delivery to silo (controlled)	0.0002	0.0001	0.0002	0.0001
Cement supplement delivery to silo	0.0003	0.0002	0.0003	0.0002
Weigh hopper loading	0.0079	0.0038	0.0079	0.0038
Truck mix loading(1)	0.3153	0.0874	0.0276	0.0074
TOTAL (lb/yd^3)	0.3474	0.1029	0.0597	0.0229
% Increase from 2006 Factors	10%	9%	19%	13%
Major Source Limiting Case (tpy)	250	100	250	100
PSD (PM)/Title V (PM_{10}) Threshold (yd^3)	1,439,363	1,943,257	8,370,162	8,727,298
PSD (PM)/Title V (PM_{10}) Threshold (yd^3/hr)(4)	164	222	955	996

(1) Truck mix loading based on factor in Table 11.12-2 and multiplier of 0.282. Controlled truck loading assumes use of a fabric filter or baghouse.

(2) Fugitive emissions from vehicle traffic and aggregate and sand piles are not included.

(3) Aggregate and sand delivery and transfer are considered fugitive sources of emissions.

(4) The hourly rate assumes the facility operates 8,760 hr/yr.

AP-42 Table 11.19.2-2: Emission Factors for Crushed Stone Processing Operations

Stone Crushing Processes(1)	August 2004			
	Uncontrolled		Controlled	
	PM (lb/ton)	PM_{10} (lb/ton)	PM (lb/ton)	PM_{10} (lb/ton)
Tertiary Crushing (crush to <1")	0.0054	0.0024	0.0012	0.00054
Screening	0.0125	0.0043	0.0011	0.00037
Conveyor Transfer Point (x2)	0.006	0.0022	0.00028	0.000092
Total (lb/ton)	**0.0239**	**0.0089**	**0.00258**	**0.001002**
Emissions (tpy) for 150 ton/hr crusher(2)	**15.7**	**5.8**	**1.7**	**0.7**

(1) Assume only one crusher capable of crushing to <1" with one screening process and two conveyor transfer points to and from the crusher.

(2) To be eligible for the general permit, the rock crusher cannot exceed 150 tons per hour.

Potential Emissions based on General Permit Condtions

Permitted Scenarios(1)	Uncontrolled (tpy)(2)	
	PM	PM_{10}
Annual Limit (yd^3/yr)	**1,000,000**	
No rock crusher	173.69	51.46
With rock crusher	189.39	57.31
Max. Production Rate (yd^3/hr)	**150**	
No rock crusher	228.23	67.62
With rock crusher	243.93	73.47

(1) The proposed General Permit will require plants with a maximum hourly production rate over 150 cubic yards per hour to limit annual production to 1 million cubic yards per year. Rock crushing capacity shall not exceed 150 tons per hour.

(2) Only emergency stationary engines may be used for backup power. Since these are limited through federal regulations to less than 100 hours per year of nonemergency operation, emissions of PM and PM_{10} will be negligible.

Non-Emergency Engine Emissions

**Assumption that AP-42 emission factors represent worst-case emissions for non-emergency engines*

Pollutant	Emission Factor[1] (lb/MMBtu fuel input)	Potential Emissions [6] (ton/yr)
NO_x [2]	4.41	95.18
CO	1.9	41.01
SO_2 [3]	0.001515	0.03
PM [4]	0.062	1.34
PM_{10} [4]	0.31	6.69
VOC [5]	0.3276	7.07
Total HAP	0.00387	0.08

(1) The highest emission factor for diesel-fired engines from AP-42 Chapter 3.3 (Diesel Industrial Engines) or 3.4 (Large Stationary Diesel Engines) is used, with exception of SO_2.

(2) With NOx as the controlling polluant and allowing up to 95 tpy, Max. Annual Diesel Usage = 315,000 gallons per year

(3) % Sulfur = 0.0015 (Based on 15 ppm allowed for nonroad diesel in 40 CFR 80.510(b), as required by 40 CFR 63, Subpart ZZZZ.)

(4) PM is only filterable particulate. Only AP-42, Ch. 3.4 has a filterable PM emission factor. PM_{10} includes both filterable (< 10 microns) and condensable particulate.

(5) VOC is assumed to be TOC * 91% (as indicated in an AP-42 factor footnote as the non-methane portion)

(6) PTE = EF * Diesel use (gal) * 7.1 lb/gal * 19,300 Btu/lb * MMBtu / 1,000,000 Btu * ton / 2000 lb