Appendix 3.1 Emission calculation for construction dust

Details of Dust Emission Sources for 1-hour, 24-hour and Annual TSP Assessment

Organic Waste Treatment Facility

Works Area	Sources	Parameter			Remarks
Organic Waste Treatment Facility	Heavy construction Source ID: S2-S7	Percentage active area, p	100	%	Assume 100% works area for heavy construction
		Mitigation efficiency	87.5	%	Water suppression 8 times a day
		No. of working days per month, d	26	days	Assume by engineer
		No. of working hours per day, h	12	hour	Assume by engineer
		Emission Factor	2.69	Mg/hectare/month of activity	AP42, Section 13.2.3.3
		Emission Rate	0.000239494	g/m²/s (unmitigated)	=2.69*1000000/(10000*d*h*60*60)*p/100
			2.99368E-05	g/m²/s (mitigated)	
	Wind Erosion Source ID: S2-S7	Percentage active area, p	100	%	
		Emission Factor	0.85	Mg/hectare/year	AP42, Table 11.9-4
		Emission Rate	2.69533E-06	g/m²/s	=0.85*1000000/(10000*365*24*60*60)*p/100
Stock Pile Source ID: BCP6	Material handling and storage piles Source ID: S1 & S8	Percentage open stockpile area, p	20	%	80% stockpiling area is covered by impervious sheets and all dusty material should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.
		Particle size multiplier, k	0.74		k (particle size < 30μm)
		Moisture content, M	5	%	Asuume made by engineer, worst case scenario
		Average wind speed, U	2.5	m/s	Annual mean wind speed from mm5 year 2010 (date 2 Jan to 30 Dec)
		Emission Factor, E	0.000387622	kg/Mg	E=k*0.0016*[(U/2.2)^1.3/(M/2)^1.4], AP42, Section 13.2.4.3
		Maximum daily average output	106.8	m^3/day	From engineer Total volume of output: 25,000 m^3 Anticipated dusty construction activities duration: 9 months (assume 26 working days per month)
		Maximum hourly average output, op	8.9	m^3/hr	12 hours per day
			22	Mg/hr	Assume capacity of dump truck is 6m^3 and 15 tons
		Area of the stockpile, A	4012.08	m^2	Assumption made by consultant
		Emission Rate	5.97336E-07	g/m²/s (unmitigated)	=E*1000*op/(A*60*60)
			1.19467E-07	g/m²/s (mitigated)	=E*1000*op/(A*60*60)*p/100
	Wind erosion Source ID: S1 & S8	Percentage open stockpile area, p	100	% (unmitigated)	
			20	% (mitigated)	80% stockpiling area is covered by impervious sheets
		Emission Factor	0.85	Mg/hectare/year	AP42, Table 11.9.4
		Emission Rate	2.69533E-06	g/m²/s (unmitigated)	=0.85*1000000/(10000*365*24*60*60)*p/100
			5.39066E-07	g/m²/s (mitigated)	