Calculations to support emissions estimates BSC Coventry CY 2018

Air exhaust rate (cfm) * concentration of EtO (ppm_v)* units conversion factor = annual emissions (lb/year)

Calculation

ft^3 of air	ft^3 EtO	60 min	24 hr		359 day	lb mole EtO	44.05 lb EtO
min	10^6 ft^3 of air	hr	day		year	379.4 ft^3 of EtO	lb mole EtO

unit conversion 0.06002132

cfm * ppm_v * $6.00x10^{-2}$

Air Exhaust	treated through stack		roof vent		untreated air through stack						roof/wall vent			roof vent
Fan ID	EF-1	EF-2	EF-3	EF-4	EF-5		EF-6	EF-7			EF-8		AHU-1	EF-11
Rate CFM	7,200	2,100	675	469	5,700		3,600	11,700			2,813		16489	3,000
from	dry beds	verantis scrubber	drum room	acid room	aeration room		8,9,10 floor sweeps	1,2,3,5,6,7 floor and vent sweeps			processed warehouse		unprocessed warehouse	pump room
EtO Concentration in Air GC measurements average of 35040 points	dry bed effluent 0.073	aeration dry bed 0.079	drum room 0.710	acid room 0.079	dry bed room 0.182	aeration room 0.174	8,9,10 front 0.305	1,2,3 front vent 0.106	1,2,3 back vent 0.147	5,6,7 front 0.260	processed warehouse 0.412	front hallway 0.272	unprocessed warehouse 0.271	pump room 0.214

Emission Calculations		EtO emissions pounds per year
treated air exausted through stack	EF-2 * aeration dry bed + (EF-1 - EF-2) * dry bed effluent	32.3
untreated air exhausted through stack		
aeration room	EF-5 * ave of (aeration room + dry bed rroom)	60.9
8,9,10 floor sweeps	EF-6 * 8,9,10 front	66.0
floor sweeps, vents and pump room	EF-7 * ave of (1,2,3 front+1,2,3 back+5,6,7 front)	120.2
untreated air not through stack		
drum room	EF-3*drum room	28.7
acid room	EF-4*acid room	2.2
warehouse	(EF-8+AHU-1)*ave of (unp ware+proc ware+front hall)	368.6
pump room	EF-11*pump room	38.6
Total Estimated EtO Emissions		**717.4 pounds per year**
emitted through stack		279.3
emmited through roof or other		438.1