A Permit by Rule (PBR) Application for an Interior Surface Coating Facility

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Abstract

Block one full paragraph (no indenting the first line). Provide one full sentence each week as you complete a level 1 heading section, describing what material or calculations were presented in that section. By the time the week, eight material is complete, you will have eight sentences in this abstract (one for each week).

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**General Considerations for Operation**

The general consideration for the operation will be focused on typical ERP project implementation which will comprise of the following;

**Selection of project**– It will entail project that will focus on a definition with an inclusion of criteria selection of the same.

**Scope statement** –the scope statement will be characterized by clarity and crisp involving costs, timeline, product scopes of Enterprise resource planning, implementation location and limitation consideration.

**MS project/Work Breakdown Structure**-The Work Break down Structure will be comprised of packages of work like SAP ERP will initiate different WBS structure implementation such as unit test, to see which may be better design scope to help us better to make the right decision, development, system integration testing, functional design and Go live.

**Risk management matrix** –it involves a process where all risks pertaining to the project is listed and therefore mapping to various steps where it will be managed in form of the matrix to give a better fit.

**Communication plan**-it involves a process where regular hierarchy is checked in terms of escalation which is typical and communication progress.

**Earned Exercise Value**- It involves comparing the plan revenue and actual cost and if it has variances. It includes comparing it against budget and representation of the data in form of the graph that will be shown(Godish, Davis, & Fu, 2015).

**VOC and ES Content per Vehicle**

*Blank for Units 2-8. Fill this in for Unit 3. Be sure and show (illustrate) your actual mathematical calculations for Units 3-7 sections, rather than describe them. For example: 2.8 lbs/gal of VOC x 10.0 gal per vehicle = 28.0 lbs VOC/vehicle*

**Operational Air Emission Rates**

Operational air emission rate refers to daily or weekly or yearly pollution amount which is released during the painting process by paint booths to the atmosphere. The contents are Exempt Solvent (ES) and Volatile Organic Compound (VOC). The contents allow calculation of annual and hourly emissions rates (Code, 2009). Independent calculation is then performed to the values. When yearly maximum emission is divided by operating yearly schedule, the results will be hourly average emissions and not hourly maximum emission rate (Godish, Davis & Fu, 2014). The following involves the calculation of the hourly maximum VOC emission rate of gallons maximum number in one hour;

* Interior lining: 2 vehicles per day, 5hrs per day, 4days per week and 10 gallons per vehicle.
* The rate of application emission of the vehicle lining involving 2vehicles per day,5hrs per day,4days per week and 2 gallons per vehicles.

The interior lining gallons used per hour:

20 gallons divided 5=4 gallons per hour

4 represent gallons used in one hour for vehicle application lining.

4 gallons divided by 5 = 0.8 gallons per hour

Emission maximum rate =VOC content coating in volume \*hourly maximum gallons used

Emission maximum rate involving interior lining 4 gallons per hour \*VOC content coating

Vehicle maximum application lining rate 0.8 gallons per hour \*VOC content coating

The coating interior linear content equals to 10/12=0.8333 VOC (volume)

The application lining of the vehicle is 2/12=0.1667 VOC (volume)

Therefore Emission maximum rate =4\*0.8333=3.3332 gallons per hour

Interior lining =0.8\*0.8333=0.66664 gallons per hour

The total lining of interior used/yearly annual emission rate calculation=gallons used/hour \*5\*4\*52(weeks)

4\*5\*4\*52=4160 gallons \*0.8333=3466.528 gallons per year

Interior lining, therefore, is 0.8\*5\*4\*52=832gallons per year

The average rate of emission over the 5hours =VOC rate of emission per hour/53.3332/5=0.66664 gallons /hour

Interior lining =0.66664/5=0.133328 gallons /hour

Potential to emit therefore is the stationary source maximum capacity required in the emission of the pollutant under its operational and physical design. It is calculated by the multiplication of continuous operation with process hourly rate which is 8760 hours/year.

Emission rate per hour \*8760=3.333288760=29198.832 gallons per year

Therefore vehicle lining =8760\*0.66664=5839.7664 gallons per year.

**Operational Face and Filter Velocities**

**Face velocity**

Face velocity is a process where enough speed movement of booth air which is sufficient is allowed to capture particulate matter and solvent emissions, therefore, is directed out through stack exhaust via filters. The face refers to the area under which intake air moves in. Face velocity calculations entail the following vital information.

1. Make-up unit rate under which air fun flows in cubic feet/minute
2. The exhaust fun flow rate in cfm or ft3min
3. The operation process whole opening area of the booth

Calculation of either rectangular or circular opening will be as follows.

Area =Length \*width

A =5m\*4m=20m2

Circular

Area=Π\*r2

If the booth has multiple openings, the total area will be gotten by addition of all areas. The rate of air makeup flow and units of exhaust booth fun will be subtracted as follows.

Flow Rate =exhaust fun flow –unit of air make up the flow rate

Therefore face velocity=flow rate /intake area (Total)

**Filter velocity**

Filter velocity will only be calculated if slow-moving air is enough through filters in such a manner that pressure drop is maintained and acceptable in all filters together with capturing particulate matter.

**Procedure**

In order to calculate filter velocity, the following calculation must be performed;

* The flow rate of exhaust fun in f3/min
* The area of booth filters

The booth comprising of multiple filters will have its total area calculated by adding all areas of various booths. Based on the fact that the booth contains exhaust fan and air makeup unit, the flow rate of exhaust fan will be used since the total air that moves into the booth will come out through the exhaust fan.

Flow rate of the exhaust =flow rate

Filter velocity=flow rate/filter total area

Therefore filter velocity=15/20=0.75m3/s

References

Code, T. A. (2009). Title 30 Environmental Quality. *Part I Texas Commission on Environmental Quality*.

Godish, T., Davis, W. T., & Fu, J. S. (2015). *Air quality* (5th ed.). Boca Raton, FL: CRC Press.

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List additional references here alphabetically. Be sure and double-spaced and hang-indent each

the subsequent line for each reference entry, formatting to CSU APA Citation Guide

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