

M02-M05 - METAL DEPOSITION, PLASMA SPRAY, SITE SPECIFIC TEST RESULTS, 43FNS WITH WATER CURTAINS, CHEMTRONICS

CALCULATION METHODS

Annual Emissions: $E_a = U_a \times EF$ (lbs/lb sprayed) $\times C_i$

Hourly Emissions: $E_h = U_h \times EF$ (lbs/lb sprayed) $\times C_i$

E_a = Annual emissions of each listed toxic air contaminant per material, (lbs/year)

E_h = Maximum hourly emissions of each listed toxic air contaminant per material, (lbs/hour)

U_a = Annual usage of each material sprayed, (lbs/year)

U_h = Maximum hourly usage of each material sprayed, (lbs/hour)

EF = Emission Factor (lbs/lb sprayed)

C_i = Toxic air contaminant specific concentration (weight percent)

NOTES:

- PM10 Emission Factors developed from Sum of Ni & Cr Source Test Results:
 - Chemtronics: 1994 Source Test Material Metco 43FNS composition: Cr 20% and Ni 80% = 100%.
- All emissions for this calculation procedure are assumed to be Ducted.
- Annual (U_a) and maximum hourly (U_h) throughputs must be individually reported for each material sprayed.
- Site and material specific emission factors should be used where available.
- Combustion related emissions of NO_x, CO, SO_x, PIC's, etc. are assumed to be negligible as no emissions information currently exists.
- For Emissions Inventory:
 - Trace metal composition is assumed to be equivalent to the PM10 fraction.
 - Base factors on actual Source Test (ST) data if available.
 - Method for estimating annual and max hourly emissions will use Emission Factor PM10 EF (Lb / Lb overall sprayed).

POLLUTANT	DISTRICT EMISSION FACTORS (lbs emitted / lb Overall sprayed)	EMISSION FACTORS (lbs individual metal released / lb individual metal sprayed)	REFERENCE DOCUMENT	TEST LOCATION	(UNITS)	COMMENTS
NOX						
CO						
SOX						
TOG						
VOC						
TSP	3.35E-02	5.95E-02		CHEMTRONICS	lbs/lb material sprayed	Assume PM10 = TSP. Base this estimate on overall usage (lbs of material).
PM10	3.35E-02	5.95E-02		CHEMTRONICS	lbs/lb material sprayed	Base this estimate on overall usage (lbs of material).
Total Chromium	4.72E-03	2.36E-02	Site Specific test result	CHEMTRONICS		
Chromium Hexavalent	5.67E-04	2.83E-03	Site Specific test result	CHEMTRONICS		Hexavalent chromium conversion rates (HCR) based on Chemtronics 1994 Source Test = $Cr_{6+}/Total\ Cr = 5.67E-04/4.72E-03 \approx 12\%$. EF lbs emitted / lb metal in = lb Hex. Cr emitted/lb Total Cr sprayed. $C_i = Total\ Cr\ C_i \times HCR$.

Chromium NonHexavalent	4.16E-03	2.08E-02	Site Specific test result	CHEMTRONICS		NonHexavalent chromium conversion rates based on Chemtronics 1994 Source Test = $1 - \text{HCR} = 1 - (5.67\text{E-}04 / 4.72\text{E-}03) \approx 88\%$. $\text{Ci} = \text{Total Cr} \times (\text{Ci} \times (100\% - \text{HCR}))$.
Nickel	2.87E-02	3.59E-02	Site Specific test result	CHEMTRONICS		
* Other Listed Metals	3.35E-02	5.95E-02	Sum of Ni & Cr test results	CHEMTRONICS		Assume other metals released at a rate equal TSP/PM10 EF.

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