

**R01 - HAUL ROADS, GENERAL, PAVED & UNPAVED, WITH DEFAULT TRACE METAL COMPOSITION**

**CALCULATION METHODS**

**Paved Haul Roads:**

Paved Roads Annual Emissions:  $E_a = (VMT) * [(k) * (sL)^{0.91} * (W)^{1.02} * (1 - P/4N)] * (C_i) * (1 - e)$

Paved Roads Hourly Emissions:  $E_h = E_a / (Da * H)$

**Unpaved Haul Roads:**

Unpaved Roads Annual Emissions:  $E_a = (VMT) * [(k) * (5.9) * (s/12) * (S/30) * (W/3)^{0.7} * (w/4)^{0.5} * ((365 - p)/365)] * (C_i) * (1 - e)$

Unpaved Roads Hourly Emissions:  $E_h = E_a / (Da * H)$

Notes:

- \* Fugitive emission control methods and efficiencies must be identified in the database if applicable. Emission factors assume "uncontrolled" releases.
- \* TSP and PM10 factors are based on District engineering estimates as agreed upon in discussions with the Mineral Products Industry (1995 - 1996).
- \* Trace metal default concentrations are based on local source test results ~1991. Use site specific data if available.
- \* The PM10 fraction of the TSP released is based on default AP-42 procedures as agreed upon with the Mineral Products Industry.

POLLUTANT	DISTRICT EMISSION FACTORS (ppmw)	REFERENCE DOCUMENT	AP 42-FACTOR	(UNITS)	COMMENTS
NOX					
CO					
SOX					
TOG					
ROG					
TSP	1000000	TSP Factor from AP-42 included in calc method			
PM10	1000000	PM10 Factor from AP-42 included in calc method			
ALUMINUM					
ARSENIC	20				Based on local haul road samples and analyses
BARIUM					
BENZENE					
BERYLLIUM	1.0				Based on local haul road samples and analyses

POLLUTANT	DISTRICT EMISSION FACTORS (ppmw)	REFERENCE DOCUMENT	AP42-FACTOR	(UNITS)	COMMENTS
CADMIUM	1.0				Based on local haul road samples and analyses
CHROMIUM HEXAVALENT	0.0				
CHROMIUM NONHEXA VALENT	50				Based on local haul road samples and analyses
COBALT					
COPPER	100.0				Based on local haul road samples and analyses
LEAD	50				Based on local haul road samples and analyses
MANGANESE	500				Based on local haul road samples and analyses
MERCURY	0.0				
NICKEL	20				Based on local haul road samples and analyses
PAH'S (UNSPECIFIED)					
* BENZO(A)ANTHRACENE					
* BENZO(B)FLUORANTHENE					
* INDENO(1,2,3-CD)PYRENE					
* DIBENZ(A,H)ANTHRACENE					
SELENIUM	5.0				Based on local haul road samples and analyses
SILICA, CRYSTALLINE	100000				Based on local haul road samples and analyses
RESPIRABLE SILICA, CRYSTALLINE CRISTOBALITE QUARTZ	7950				PM4 fraction of PM10 silica, assumed to be 7.95%
ZINC	200				Based on local haul road samples and analyses

Last Updated on Dec 2023 By J. Lofgren