

<b>Source Category:</b>	<b>Fugitive Dust from Unpaved Road</b>
<b>SCC Code:</b>	<b>2296000000</b>
<b>Pollutants of Concern:</b>	<b>PM-10, PM-2.5</b>
<b>How is the PM National Emission Inventory developed for this category?</b>	
<b>Current Methodology (see also the link to the NEI Methodology Description):</b>	
<ul style="list-style-type: none"> <li>• Monthly PM<sub>10</sub> and PM<sub>2.5</sub> emissions are estimated by use of an empirical equation that includes the variables: mean vehicle weight (W), surface material silt content (S), surface material moisture content under natural, uncontrolled conditions (M<sub>dry</sub>), and the number of days in the month with greater than 0.01 inches of precipitation (P). (See AP-42, Section 13.2.2)</li> <li>• The monthly PM<sub>10</sub> emission factors are multiplied by the monthly vehicle miles traveled (VMT) for unpaved roads.</li> <li>• The equation and equation constants are discussed in Section 4.8.1.4 in the National Air Pollutant Emissions Trends Procedures Document for 1900-1999.</li> </ul>	
<b>Current Variables/Assumptions Used:</b>	
<ul style="list-style-type: none"> <li>• Mean vehicle weight (W) of 2.2 tons [<i>based on average vehicle weight for a typical vehicle mix.</i>]</li> <li>• Surface material silt content (S) [<i>state averages based on a set of measurement data collected over the past 15 years.</i>]</li> <li>• Surface material moisture content under dry, uncontrolled conditions (M<sub>dry</sub>)</li> <li>• Number of days in the month with greater than 0.01 inches of precipitation (P) [<i>representative weather station</i>]</li> </ul>	
<b>Uncertainties / Shortcomings of Current Methods:</b>	
<ul style="list-style-type: none"> <li>• Unpaved road source conditions have extreme variations and actual emissions can vary by orders of magnitude pointing out the importance of using as much local area data as possible in the empirical equation.</li> <li>• The national method uses a default value for vehicle weight of 2.2 tons may not apply in all areas and should be reviewed for each specific area.</li> <li>• Average values for silt content are used for entire state areas. The values are based on some 200 samples in 30 states. The average silt content was calculated for each state that had at least three representative samples. Emissions from states without sample representation were assumed to have a silt content of the average of all 200 samples.</li> <li>• Precipitation data for a state was collected from one meteorological station to represent precipitation for the rural areas of the state.</li> <li>• VMT for unpaved roads as obtained from available national databases is not reliable. Moreover, it is available only for state totals and must be allocated to counties, which introduces considerable error.</li> </ul>	

**How can State, Local, and Tribal agencies improve upon this methodology?**

- Local data for ADTV, VMT, and road classifications by county. [*Mobile Source Section of the state Environmental Department, State Department of Transportation*]
- Local data to represent the average weight of vehicles. [*Department of Motor Vehicles and in the Mobile Source Section of the state Environmental Department*]
- The moisture content in the national emission calculation is based on the precipitation from one reporting station in each state. Contact the National Weather Bureau or private or research networks for local weather precipitation data that better represents the closest reporting station in the area will further improve the accuracy of the estimates.
- Estimates of actual local silt content on unpaved road surfaces will enhance accuracy of emission estimations (may require sampling).

**Where can I find Additional Information and Guidance?**

**EPA Contact:** Mr. William B. Kuykendal  
Emission Factor and Inventory Group  
U.S. Environmental Protection Agency  
D205-01  
USEPA Mailroom  
Research Triangle Park, NC 27711  
E-mail: kuykendal.bill@epa.gov  
Telephone: 919-541-5372

<b>AP-42, Section 13.2.2</b>	<a href="http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s02-2.pdf">http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s02-2.pdf</a>
<b>Area Source Emissions Model</b>	<a href="http://www.epa.gov/ttn/chief/software/asem/index.html">http://www.epa.gov/ttn/chief/software/asem/index.html</a>
<b>County Level Emission Density Maps for this Source Category</b>	<a href="http://www.epa.gov/ttn/chief/eiip/pm25inventory/densitymaps.pdf">http://www.epa.gov/ttn/chief/eiip/pm25inventory/densitymaps.pdf</a>
<b>National Air Pollutant Emission Trends Procedures Document for 1900-1999</b>	<a href="http://www.epa.gov/ttn/chief/trends/procedures/nei_proc_99.pdf">http://www.epa.gov/ttn/chief/trends/procedures/nei_proc_99.pdf</a>
<b>NEI Methodologies Description</b>	<a href="http://www.epa.gov/ttn/chief/trends/procedures/">http://www.epa.gov/ttn/chief/trends/procedures/</a> (Section 4.8.1.4, pages 4-248 - 4-253) Note: This document is currently being revised.  <a href="http://www.epa.gov/ttn/chief/eidocs/partsec5_opbr">http://www.epa.gov/ttn/chief/eidocs/partsec5_opbr</a>

	n.pdf
<b>Procedure for Laboratory Analysis of Surface/Bulk Loading Samples</b>	<a href="http://www.epa.gov/ttn/chief/ap42/appendix/app-c2.pdf">http://www.epa.gov/ttn/chief/ap42/appendix/app-c2.pdf</a>
<b>Procedures for Sampling Surface/Bulk Dust Loading</b>	<a href="http://www.epa.gov/ttn/chief/ap42/appendix/app-c1.pdf">http://www.epa.gov/ttn/chief/ap42/appendix/app-c1.pdf</a>