Emissions Inventory Help Sheet for Vehicle Travel on Unpaved Roads

Travel on unpaved roads at a facility needs to be included in an emission inventory report. Identify which categories of the following types of equipment and speeds apply to your facility and use a separate General Process Form for each. On line 2 of the General Process Form, describe the type of equipment used on site and the average speed. If you do not want to use our default emission factors, please contact us for certain county parameters and be sure to submit an Emission Factor Calculation Form.

On the General Process Form:
- line 5, “SCC Code” is: 30502504 for sand/gravel and concrete batch facilities; 50100401 for landfills

**PM\textsubscript{10} Emission Factors, lb/VMT at miles per hour (mph) average**

VMT = “Vehicle miles traveled”

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>10 mph</th>
<th>15 mph</th>
<th>20 mph</th>
<th>25 mph</th>
<th>30 mph</th>
<th>35 mph</th>
<th>40 mph</th>
<th>45 mph</th>
<th>50 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy-Duty Vehicles (e.g., haul trucks, cranes)</td>
<td>2.13</td>
<td>3.2</td>
<td>4.27</td>
<td>5.33</td>
<td>6.4</td>
<td>7.47</td>
<td>8.53</td>
<td>9.6</td>
<td>10.67</td>
</tr>
<tr>
<td>Medium-Duty Vehicles (e.g., front end loaders, forklifts)</td>
<td>0.57</td>
<td>0.86</td>
<td>1.14</td>
<td>1.43</td>
<td>1.71</td>
<td>2.0</td>
<td>2.28</td>
<td>2.57</td>
<td>2.85</td>
</tr>
<tr>
<td>Light-Duty Vehicles (e.g., pickup trucks)</td>
<td>0.29</td>
<td>0.44</td>
<td>0.59</td>
<td>0.74</td>
<td>0.88</td>
<td>1.03</td>
<td>1.18</td>
<td>1.33</td>
<td>1.47</td>
</tr>
</tbody>
</table>

The emissions factors above are uncontrolled. The calculation for travel without dust control is:

\[
\text{Annual miles (line 11)} \times \text{emission factor (column 16)} = \text{PM}_{10} \text{ emissions (column 25)}
\]

You may account for dust control efforts on haul roads if: (1) you use water or other dust suppressants, and (2) if you are in full compliance with the record keeping requirements in Rule 310, Fugitive Dust and/or Rule 316, Nonmetallic Mineral Mining and Processing. Record capture efficiency (in column 20) at 100%. A control efficiency (column 23) of 90% is allowed for regular watering or use of a chemical palliatives (dust suppressants). Document the dust control device used on a Control Device Form, using Control Type Code 217 (Dust Suppression).

The calculation including dust control is as follows:

\[
\text{Annual miles (line 11)} \times \text{emission factor (column 16)} \times (1 – \text{control efficiency}) = \text{PM}_{10} \text{ (lbs., column 25)}
\]

**Example:** Heavy-duty trucks traveled 1800 miles at 15 mph on regularly watered haul roads on site.

\[
1800 \text{ VMT} \times 3.2 \text{ lb/VMT} \times [1 - (100\% \times 90\%)] = 576 \text{ lb. PM}_{10}
\]

**NOTE:** If your business has an issued or pending Title V permit, emissions from unpaved road travel should be reported on the "Data Certification / Fee Calculation" Form as "\text{PM}_{10} (non-billable)".

Emissions Inventory EXAMPLE: Unpaved Road Travel

You may use this form for reporting. Indicate vehicle size and speed.

**General Process Form – 2018**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process ID ____________________

2- Process Type/Description: circle one: light/medium/heavy

   unpaved road travel, ^   ^   -duty vehicles @ mph

3- Stack ID(s) (only if required on Stack Form) _ NA __

4- Process TIER Code: 140799 - fugitive dust

5- SCC Code 30502504 (8 digit number)

6- Seasonal Throughput Percent: Dec-Feb _____% Mar-May _____% Jun-Aug _____% Sep-Nov _____%

7- Normal Operating Schedule: Hours/Day _____ Days/Week _____ Hours/Year _____ Weeks/Year _____

8- Typical Hours of Operation (military time) Start ____ End ____

9- Emissions based on (name of material or other parameter) e.g. “rock”, “diesel”, “vehicle miles traveled” __________ vehicle miles traveled

10- ☐ Used (input) or ☐ Produced (output) or ☑ Existing (e.g. VMT, acres)

11- Annual Amount (a number) __________

12- Fuel Sulfur Content (in percent) __________

13- Unit of Measure (for example: tons, gallons, 1000 cu ft, acres, units produced, etc.) ______ vehicle miles traveled

14- Unit Conversion Factor (if needed to convert Unit of Measure to correlate with Emission Factor Units, see Attachment 5) __________

<table>
<thead>
<tr>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutant</td>
<td>Emission Factor (EF) Information</td>
<td>Control Device Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-10</td>
<td>Emission Factor (EF) (number)</td>
<td>Emission Factor Unit (lb/acre)</td>
<td>Controlled EF? Yes or No</td>
<td>Calculation Method Code*</td>
<td>Capture% Efficiency</td>
<td>Primary Control Device ID</td>
<td>Secondary Control Device ID</td>
<td>Control Device(s) % Efficiency</td>
<td>Efficiency Reference Code**</td>
<td>Estimated Actual Emissions</td>
</tr>
<tr>
<td>VMT</td>
<td>No</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VMT emission factors are uncontrolled. With daily watering & 4.5% minimum moisture content: capture efficiency = 100% and control efficiency = 90%.

*How to calculate emissions: Multiply annual miles (line #11) x EF (lbs/VMT, column #16) x [1- column 23] = column #25, Estimated emissions.*

**Control Efficiency Reference Codes

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

---

Maricopa County Air Quality Department
Emissions Inventory Unit
2018

EmissionsInventory@mail.maricopa.gov
(602) 506-6790

3800 North Central Avenue | Suite 1400 | Phoenix, Arizona 85012