

1.A.3.b vii - Road Transport: Automobile Road Abrasion

Short description

In sub-category *1.A.3.b vii - Road Transport: Automobile Road Abrasion* emissions from road abrasion in Road Transport are reported. Therefore, this sub-category is an important source for a) particle emissions and b) emissions of heavy metals, POPs etc. included in these particles.

Method	AD	EF	Key Category
T1, T3	NS, M	CS	L&T: TSP, PM _{2.5} , PM ₁₀

Methodology

Activity data

Abrasive emissions from tyre and brake wear are estimated based on vehicle-type specific mileage data.

For detailed mileage data, please see [superordinate chapter](#) on abrasive emissions from road vehicles.

Emission factors

The tier1 emission factors used here have been derived from the 2019 version of the EMEP/EEA air pollutant emission inventory guidebook.

[gallery size="medium"](#) : AD_Mileage.png : AD_Mileage_el.png [gallery](#)

+++ Emission factors

The tier1 emission factors used here have been derived within a literature study in 2006. During this study, average amounts of particulate wear per km ($= EF_{PM}$) were derived from which annual amounts of PM emissions can be estimated as follows:

$$EM(PM)_{\text{annual, type of vehicle}} = EF(PM)_{\text{specific, per km}} \cdot \text{Mileage}_{\text{annual, type of vehicle}}$$

Table 1: Average abrasion rates [mg TSP / vehicle km] for different types of road vehicles

Vehicle type	Abrasion rate
Passenger Cars	> 15
Motorcycles	> 6
Mopeds	> 6
Light Duty Vehicles	> 15
Heavy Duty Vehicles	> 76
thereof: Trucks	> 76
thereof: Buses	> 15

Based on average contents of heavy metals per gram of emitted particulate road surface matter (also derived during the literature study), emission factors for HM are estimated as follows:

$$EF(HM)_{\text{per km, type of vehicle}} = EM(PM)_{\text{per km, type of vehicle}} \cdot \varnothing_{HM} \text{content}_{\text{road surface}}$$

Table 2: Average heavy metal contents [mg HM / kg TSP] in abrasive particulate matter from road surface

HM	Metal content
Cd	> 0.21



chapter [8.1 - Recalculations](#)].

Planned improvements

Besides the **routine revision of the TREMOD model**, no specific improvements are planned.

[bibliography](#) : 1 : EMEP/EEA, 2019: EMEP/EEA air pollutant emission inventory guidebook 2019;
<https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>; Copenhagen, 2019. [bibliography](#)