1.A.3.b vi - Road Transport: Automobile Tyre and Brake Wear

Short description

In sub-categories *1.A.3.b vi - Road transport: Automobile tyre and brake wear* emissions from automobile tyre and brake wear in RT are reported. Therefore, these sub-category is an important source for a) particle emissions and b) emissions of heavy metals, POPs etc. included in these particles.

Category Code	**Method**					**AD**					**EF**				
1.A.3.b vi	T1, T3					NS, M					CS				
Key Category	**SO_2**	**NO_x**	**NH_3**	**NMVOC**	**CO**	**BC**	**Pb**	**Hg**	**Cd**	**Diox**	**PAH**	**HCB**	**TSP**	**PM_{10}**	**$PM_{2.5}$**
1.A.3.b vi	-	-	-	-	-	L/-	L/-	-	-/-	-	-/-	-	L/-	L/T	L/-

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

Table 1: Default emission factors applied

~ Source	= **Tyre Wear**							= **Brake Wear**					
~ Vehicle Type	= **PCs**	= **LDVs**	= **HDVs**	= **Buses**	= **MTWs**	**1**		= **PCs**	= **LDVs**	= **HDVs**	= **Buses**	= **MTWs**	**1**
< **Particulate Matter**, in [mg/km]													
< BC	> 1.07	> 1.69	> 4.50	> 4.50	> 0.552	> 0.750	> 1.17	> 3.265	> 3.265	> 0.444			
< PM_{2.5}	> 4.49	> 7.10	> 18.9	> 18.9	> 1.93	> 2.93	> 4.56	> 12.7	> 12.7	> 1.44			
< PM₁₀	> 6.400	> 10.1	> 27.0	> 24.3	> 2.80	> 7.35	> 11.5	> 32.0	> 28.8	> 3.63			
< TSP	> 10.7	> 16.9	> 45.0	> 45.0	> 4.60	> 7.50	> 11.7	> 32.7	> 32.7	> 3.70			
< **Priority Heavy Metals**, in [µg/km]													
< Pb	> 1.88	> 2.97	> 4.26	> 3.10	> 0.810	> 45.5	> 71.0	> 199	> 199	> 22.5			
< Hg	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0			
< Cd	> 0.050	> 0.079	> 0.114	> 0.083	> 0.022	> 0.168	> 0.262	> 0.734	> 0.734	> 0.083			
< **Other Heavy Metals**, in [µg/km]													
< As	> 0.041	> 0.064	> 0.092	> 0.067	> 0.017	> 0.506	> 0.790	> 2.21	> 2.210	> 0.250			
< Cr	> 0.255	> 0.402	> 0.576	> 0.419	> 0.109	> 17.3	> 27.0	> 75.7	> 75.7	> 8.55			
< Cu	> 1.86	> 2.94	> 4.21	> 3.06	> 0.800	> 383	> 598	> 1,674	> 1,674	> 189			
< Ni	> 0.320	> 0.505	> 0.723	> 0.526	> 0.138	> 2.45	> 3.83	> 10.71	> 10.71	> 1.21			

< Se	> 0.214	> 0.338	> 0.484	> 0.352	> 0.092	> 0.15	> 0.234	> 0.655	> 0.655	> 0.074				
< Zn	> 79.5	> 126	> 180	> 131	> 34.2	> 65.1	> 102	> 284	> 284	> 32.1				
POPs														
< PCDD/F	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA				
< **PAHs**, in [µg/km]														
< B[a]P	> 0.032	> 0.049	> 0.134	> 0.120	> 0.013	> 0	> 0	> 0	> 0	> 0				
< B[b]F	> 0.038	> 0.063	> 0.161	> 0.144	> 0.019	> 0	> 0	> 0	> 0	> 0				
< B[k]F	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0	> 0				
< I[..]P	> 0.019	> 0.028	> 0.082	> 0.072	> 0.006	> 0	> 0	> 0	> 0	> 0				
< ∑ PAHs 1-4	> 0.090	> 0.140	> 0.379	> 0.336	> 0.038	> 0	> 0	> 0	> 0	> 0				
1														

Discussion of emission trends

(emissions from wear/abrasion only; no fuel combustion included)

Table: Outcome of Key Category Analysis

for:	**BC**	**Pb**	**TSP**	**PM_{10}**	**$PM_{2.5}$**
by:	L/-	L/-	L/-	L/T	L/-

All reported emissons from tyre and brake wear are connected directly to the mileage driven by the road vehicles covered.

Particulate Matter

Heavy metals

The emissions of heavy metals are as well linked directly to the trend of mileage.

Recalculations

Activity data (mileage) have been revised due to the regular revision of the TREMOD model. (see superordinate chapter]).

However, the biggest changes occur in the tier1 **emission factors** that have been revised fundamentally in order to be in line with the tier1 default values provided in the EMEP/EEA Guidebook 2019. Unfortunately, the variety of old and revised emission factors cannot be compared here in a comprehendible way.

For more information on recalculated emission estimates for Base Year and 2018, please see the pollutant-specific recalculation tables following chapter 8.1 - Recalculations.

Planned improvements

Besides a routine revision of the underlying model, no specific improvements are planned.

FAQs

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