

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							
< PM ₁₀	> 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							
< Σ PAHs 1-4	> 0.090	> 0.140	> 0.379	> 0.336	> 0.038	> 0	> 0	> 0	> 0	> 0							
1																	

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~ Material					= Tyre Wear					= Brake Wear							
~ Vehicle type	= PCs	= LDVs	= HDVs	= Buses	= MTWs ¹	= PCs	= LDVs	= HDVs	= Buses	= MTWs ¹							
Particulate Matter [mg/km]																	
PM _{2.5}	> 4.49	> 7.10	> 18.90	> 18.90	> 1.93	> 2.93	> 4.56	> 12.74	> 12.74	> 1.44							
PM ₁₀	> 6.40	> 10.10	> 27.00	> 24.30	> 2.80	> 7.35	> 11.47	> 32.00	> 28.80	> 3.63							
TSP	> 10.70	> 16.90	> 45.00	> 45.00	> 4.60	> 7.50	> 11.70	> 32.65	> 32.65	> 3.70							
Heavy Metals [µg/km]																	
Priority HM																	
Pb	> 1.31	> 2.18	> 8.70	> 7.25	> 0.56	> 120.00	> 249.00	> 12.00	> 12.00	> 51.11							
Hg	> 0.002	> 0.003	> 0.012	> 0.010	> 0.001	> 0.00	> 0.00	> 1.68	> 1.68	> 0.00							
Cd	> 0.18	> 0.30	> 1.20	> 1.00	> 0.08	> 0.15	> 0.32	> 0.00	> 0.00	> 0.07							
Other HM																	
As	> 0.14	> 0.24	> 0.96	> 0.80	> 0.06	> 0.13	> 0.26	> 2.81	> 2.81	> 0.05							
Cr	> 0.16	> 0.27	> 1.08	> 0.90	> 0.07	> 1.82	> 3.77	> 361.80	> 361.80	> 0.77							
Cu	> 0.25	> 0.42	> 1.68	> 1.40	> 0.11	> 1,588	> 3,289	> 15,477	> 15,477	> 4,056							
Ni	> 0.16	> 0.27	> 1.08	> 0.90	> 0.07	> 3.36	> 6.96	> 22.45	> 22.45	> 1.43							
Se	> 1.80	> 3.00	> 12.00	> 10.00	> 0.80	> 0.28	> 0.58	> 1.34	> 1.34	> 0.12							
Zn	> 1,035.00	> 1,725	> 11,700	> 9,750	> 442	> 512	> 1,061	> 620	> 620	> 218							
POPs [µg/km]																	
PCDD/F	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA	= NA							
PAH																	
B[a]P	> 0.03	> 0.05	> 0.13	> 0.12	> 0.01	= NA	= NA	= NA	= NA	= NA							
B[b]F	> 0.04	> 0.06	> 0.16	> 0.14	> 0.02	= NA	= NA	= NA	= NA	= NA							

