

Discussion paper – Black carbon methodology for 6D Other Waste and use of tobacco (3D3)

The following categories are reviewed:

- Car fires
- Building fires
- Use of tobacco (3D3-other product use)

Other Waste (6D)

No emission factors were found for accidental vehicle or building fires. It is recommended that BC is listed as NE in the EF tables.

Use of tobacco (3D3)

Very little information concerning BC emissions from other product use is available. It is assumed that EC equals BC for tobacco smoking. In the following, it is assumed that one cigarette contains 1 g of tobacco and one cigar contains 5 g of tobacco. The table below lists the available EFs.

	Hildemann, 1991		Schauer et al., 1998	
	of mass cigarette smoke	kg/Mg	of mass cigarette smoke	kg/Mg
OC	59.5 %	12.14	46 % ±1.8	12.42
EC	0.49 %	0.100	0.45 % ±0.1	0.122

The two sources Hildemann (1991) and Schauer et al. (1998) provides very similar data, it is recommended that the EC EF from Schauer et al. (1998) is used for BC.

Schauer et al. (1998) provide a standard error for an EF value, a log-normal distribution is assumed in the calculation of lower and upper 95 % confidence intervals.

Tier 2 emission factors					
	Code	Name			
NFR source category	3.D.3	Other product use			
Fuel	NA				
SNAP (if applicable)					
Technologies/Practices	Tobacco combustion				
Region or regional conditions					
Abatement technologies					
Not applicable					
Not estimated					
Pollutant	Value	Unit	95 % confidence interval		Reference
			Lower	Upper	
Black carbon	0.45	% of PM _{1.8}	0.30 %	0.67 %	Schauer et al., 1998
Black carbon	0.122	kg/Mg	0.116	0.127	Schauer et al., 1998
Organic carbon	46	% of PM _{1.8}	42.6 %	49.7 %	Schauer et al., 1998
Organic carbon	12.42	kg/Mg	11.50	13.41	Schauer et al., 1998

References

Hildemann et al., 1991: Chemical Composition of Emissions from Urban Sources of Fine Organic Aerosol, Lynn M. Hildemann, Gregory R. Markowski, and Glen R. Cass, Environmental Science and Technology, 1991, Vol. 25, No. 4, pp 744-759. Available at: <http://pubs.acs.org/doi/pdf/10.1021/es00016a021>

Schauer et al., 1998: Characterization and Control of Organic Compounds Emitted from Air Pollution Sources, Final Report, James J. Schauer, Mike J. Kleeman, Glen R. Cass and Bernd R. T. Simoneit, April 1998, Prepared for California Environmental Protection Agency, Air Resource Board, Research Division. Available at: <http://www.arb.ca.gov/research/apr/past/93-329a.pdf> and <http://www.arb.ca.gov/research/apr/past/93-329b.pdf>