ASSESSMENT OF CURRENT BC METHODS IN GUIDEBOOK *(can those with "N" for Documentation table kindly send the xls files, thank you)*							
NFR		**number of EFs**	**UNit**	**Classification**	**No EFs**	**Documentation table (Y/N)**	**Notes/Improvement needs**
1A1		30	% PM2.5	EC (27) Un (3)	3	Y	EFs mainly based on assumptions - literature review
1A2		4	% PM2.5	EC	3	Y	The EFs refer to 1A4a – literature review
1A2gvii	Mobile/Industry, construction		% PM2.5	EC			
1A3a	Aviation	1 for all tiers (T2 PM EFs in Annex5)	%PM2.5	EC	1*	N	No information in the table but reference to Appendix 3 f-BC old (based on 2008). literature review *No T1 PM factor, f-BC available if CS PM is known
1A3b	Road Transport (combustion/abrasion)	30	%PM2.5	EC 90%		N	15-20 yrs old, some refinement needed not major issues No EFs, gasoline vehicles old in cold climate higher emissions + Vladislav new inputs
1A3c	Railroad		%PM2.5	EC		N	old data, based on HD not locomotive, need update, some improvements possible - *Luke, Mark, send table*
1A3di, dii 1A4cii	Navigation, national fishing, recreational boats (bunker fuels)	1	%PM2.5	EC	1	Y	Indicated as "NO" in the table but a note and a reference to Appendix A – new development to be reflected IMO
1A3di, dii 1A4cii	Navigation, national fishing, recreational boats (other fuels)	7	%PM2.5	EC	(7)	Y	No information in the table but a note and a reference to Appendix A – new development to be reflected IMO
1A4aii, bii, ciii	Mobile machinery/non-road		% PM2.5	EC			not Stage5 *Susana – OK?*
1A4ai,bi,ci 1A5a	Stationary, commercial/institutional (coal)	1 value for 16 cases + 1 value 1A4bi	% PM2.5	EC		Y	Suitability for EMEP – 10 yrs old rural households China (Zhang 2012) or 20 yrs old S. Africa (Engelbrecht 2002)
1A4bi	Residential: Stationary (wood)	2+2 for 6 cases 1 for 4 cases	% PM2.5	Un		Y	Nebulous >15 yrs old, compilation of several references (Kupiainen 2007) > 10 yrs old Aggregate of GB tables 2013? and Naturvårdsverket 2011
1A4ai-ci, 1A5a	Residential: Stationary (wood)	1 value for 10 cases	% PM2.5	EC		Y	o.k. (Austria 10 yrs old, original %PM10~PM2.5) (Schmidl 2011)
1A4ai-ci, 1A5a	Residential: Stationary (biomass, wood)	1 for 11, 1 for 9 cases 6 values	% PM2.5	Un (EC)		Y	Incorrect/inaccurate? 10 yrs old (Goncalves 2011) + compilation from references or modelled (Johansson 2011, Denier 2015)
1A4ai-ci, 1A5a	*Residential: Stationary (gaseous)*	*3 values*	*% PM2.5*	*EC*		Y	*Very old references(Hildemann et al. (1991), Muhlbaier (1981)) – needs revision- literature review*
1A4		*Wood: alternative EFs available from Nordic measurement programme and Finland*					
1A5b	Mobile (including military)						
1B1a	Fugitives - coal mining and handling	0			4	Y	literature review
1B1b	Fugitives - Solid fuel transformation	1	% PM2.5	EC	8	Y	literature review
1B1c						Y	literature review
1B2aiv	Fugitives - Refining, storage	1	% PM2.5	EC		Y	literature review
1B2c	Venting and flaring	1	% PM2.5	rBC	4	Y	Stated to be EC in the GB, literature review
1B2d	Other fugitive				1	Y	literature review
2A	Mineral Cement Mineral Lime Mineral Glass (Carlo send file)		% PM2.5 % PM2.5 % PM2.5	EC EC EC		N	large UC (through PM2.5 quality), clear explanation of combustion/process EFs to avoid double-counting
2B	Chemical industry	1	% PM2.5	EC		Y	
2B10a	Other Chemical- Urea	1	% PM2.5	EC		Y	
2B10a	Other Chemical – Black carbon	1	% PM2.5	EC		Y	15 yrs old, compilation of different references (Kupiainen, 2007)
2C1	*Iron and steel*	6	% PM2.5	EC (5) Un (2)		Y	2 need for update (Kupiainen 2004)
2C2	Ferroalloys	1	% PM2.5	EC		Y	
2C3	Aluminium production	1	% PM2.5	EC		Y	need for update (Chow 1993)
2C7a	*Copper production*	*1 value for 3 cases*	*work in progress*				
2D3b	*Road paving*	*1 value for 3 cases*	*work in progress*				
2D3c	*Asphalt roofing*	*1 value for 3 cases*	*work in progress*				
2G	*Other*	*1*	*work in progress*				ols reference Schauer 1998
2H1	Pulp and paper	3	% PM2.5	EC		N	correct values? (USEPA Species 2011)
3F/5E	Field burning of agriculture waste	3 values	% PM2.5	EC		N	Turn et al. 1997 applied for field burning - values as EC >20yrs old *(Documentation file in progress)*
5C1a/bi/iv	Municipal/industrial waste/sewage sludge incineration	1 value for 4 cases	% TSP/ % PM2.5	EC		N	Same value from Olmez et al. (1988) applied across all waste incineration categories (5C1a,b,biii) >30 yrs old
11B	*Forest fires (Polina)*	*Work in progress*					