Supplementary Materials: The Use of Carbonaceous Particle Exposure Metrics in Health Impact Calculations

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Table S1. Relationships between EC and BS in different studies.

Location	Study Period(s)	Relation	BC, EC Measurement Technique	Reference	% EC in BS
UK Birmingham, Edinburgh, Halifax, London (2 sites)	2008–2009	BC = $\sqrt{(5.2\ BS_{BRITISH} + 62)} - 7.9$ [d]	Aethalometer (880 nm), 16.6 $m^2 \cdot g^{-1}$	[1]	25% to 27% [c]
Netherlands, within 400 m of motorways	1997–1998	BS ($\mu g \cdot m^{-3}$) = 9.897 Abs – 3.663	VDI 2465	[2]	17%
Netherlands, urban	1998/1999	EC = 0.088 BS + 0.32	Sunset	[3]	8.8%
Netherlands, rural	2001/2002	EC = 0.056 BS + 0.16	Sunset	[3]	5.6%
Netherlands; urban + traffic	1997/1998	EC = 0.17 BS [a,b]	VDI 2465	[2]	17%
Netherlands, Whole country; rural, urban, traffic	1999/2000	EC = 0.129 BS − 0.21 [a,b]	VDI 2465	[4]	12.9%
Stockholm, Sweden; rural, urban, traffic	1999/2000	EC = 0.072 BS + 0.29 [a,b]	VDI 2465	[4]	7.2%
Munich, Germany; urban + traffic	1999/2000	EC = 0.162 BS − 0.95 [b]	VDI 2465	[4]	16.2%
Stockholm, Sweden; urban, traffic	March–May 1996	EC = (0.090 ± 0.040) BS + (1.20 ± 0.35)	ACPM 5400	[5]	9.0%
Stockholm, Sweden; urban, traffic	March–May 1996	EC = (0.060 ± 0.036) BS + (1.25 ± 1.21)	ACPM 5400	[5]	6.0%
London, UK; urban + traffic	1999/2000	EC = 0.121 BS	NOISH 5040	[6]	12.1%
Berlin, Germany; urban	1989/1990	EC = 0.18 BS [b]	VDI 3481	[7]	18%
New York, US; urban + traffic	1999	EC = 0.052 BS	NOISH 5040	[8]	5.2%
New York, US; urban + traffic	1996	EC = 0.083 BS	NOISH 5040	[9]	8.3%
Washington, US; urban + traffic	Not available	EC = (0.15 ± 0.03) BS − (0.1 ± 2.4)	Thermal-optical reflectance (TOR)	[10]	15%
Rotterdam, Netherlands; Regional, Urban, Traffic	2006–2007	EC = 0.09 BS + 0.1	EUSAAR-II	[11]	9%
		Range of all			5.2%–27%
		Mean values of all relations			12%

[a] One unit of increase in Abs is considered to equal an increase of 10 $\mu g \cdot m^{-3}$·BS, according to Roorda-Knape *et al.* [12]; [b] EC concentrations measured according to the VDI method corrected by dividing all data by 1.25 as described in Schmid *et al.* [13]; [c] Assuming EC = 77% of BC (see text); [d] $BS_{BRITISH}$ = 0.85 BS, where BS = BS_{OECD}.

Table S2. All-cause mortality in all ages related to exposure to BS and PM_{10} in different reports. (NA = not available).

Reference	Location	Relative Risk for PM10 (per 1 μg·m^{-3} Increase)	Relative Risk for BS (per 1 μg·m^{-3} Increase)	Concentration (μg·m^{-3}) (Mean or Median)		Correlation (R) PM10 and BS	Period
		95% CI (Median)	95% CI (Median)	PM_{10}	BS		
Roemer *et al.* (2001a) [14]	Amsterdam	(−1.00012)–1.00066 (1.00027)	1.00142–1.00506 (1.00324)	39	10	NA	1987–1994
Katsouyanni *et al.* (2001) [15]	Athens	1.00098–1.000208 (1.00153)	1.00041–1.00089 (1.00065)	40	64	NA	1992–1996
Katsouyanni *et al.* (2001) [15]	Barcelona	1.00058–1.00128 (1.00093)	1.00104–1.00210 (1.00157)	60	39	NA	1991–1996
Hoek *et al.* (2000) [16]	Netherlands	1.00002–1.00034 (1.00018)	1.00020–1.00060 (1.00040)	34	10	0.77	1986–1994
Verhoeff *et al.* (1996) [17]	Amsterdam	(−1.00014)–1.00134 (1.00060)	1.00020–1.00322 (1.00171)	38	12	0.51	1986–1992
Katsouyanni, (2001) [15]	Birmingham	(−1.00023)–1.00079 (1.00028)	(−1.00058)–1.00126 (1.00034)	21	11	NA	1992–1996
Katsouyanni *et al.* (2001) [15]	Cracow [a]	(−1.00056)–1.00082 (1.00013)	(−1.00062–1.00020 (−1.00021)	54	36	NA	1990–1996
Zeghnoun *et al.* (2001) [18]	Le Havre	(−1.00033)–1.00191 (1.00079)	(−1.00141)–1.00193 (1.00026)	36	16	0.70	1990-1995
Katsouyanni *et al.* (2001) [15]	London	1.00036–1.00102 (1.00069)	1.00034–1.00152 (1.00093)	25	11	NA	1992–1996
Bremner *et al.* (1999) [19]	London	(−1.00019)–1.00071 (1.00026)	0–1.00148 (1.00074)	28	13	NA	1992–1994
Zeghnoun *et al.* (2001) [20]	Paris	1.00027–1.00105 (1.00066)	1.00014–1.00072 (1.00043)	22	16	NA	1990–1995
Katsouyanni *et al.* (2001) [15]	Paris	(−1.00002)–1.00088 (1.00043)	1.00009–1.00067 (1.00038)	22	21	NA	1991–1996
Zeghnoun *et al.* (2001) [18]	Rouen	(−1.00054)–1.00102 (1.00024)	(−1.00128)–1.00198 (1.00035)	33	19	0.73	1990–1995
Anderson *et al.* (2001) [21]	West Midlands	(−1.00074)–1.00090 (1.00008)	(−1.00089)–1.00161 (1.00036)	23	13	0.64	1994–1996

[a] In this study, PM_{10} is partly derived from BS.

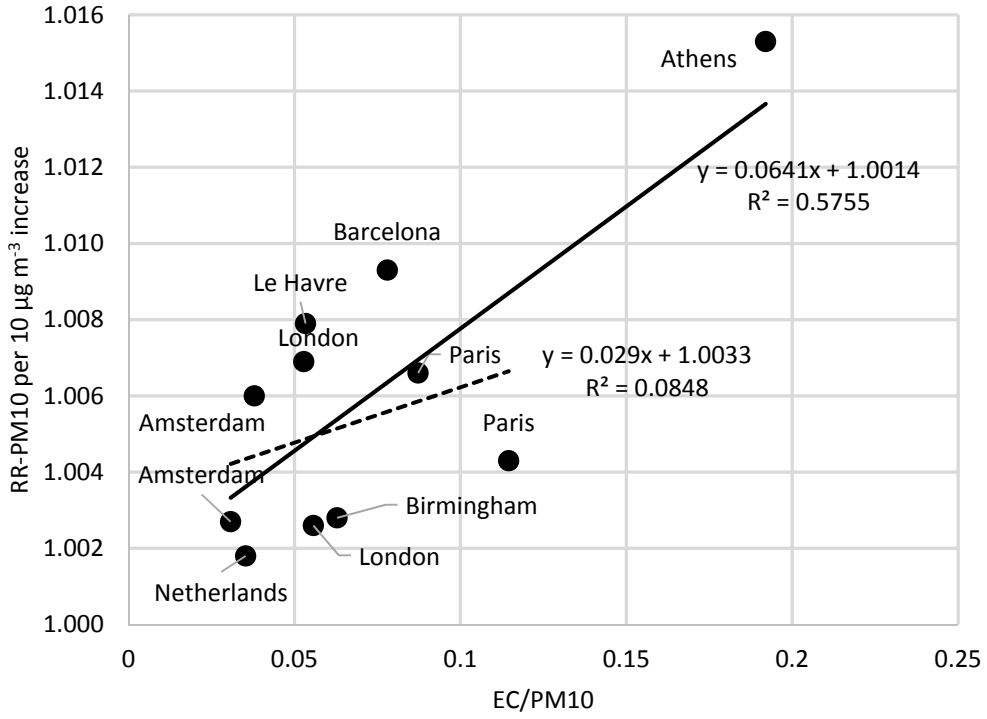

Figure S1. The same as Figure 4 except that the x-axis shows the proportion of EC in PM_{10} (EC/PM_{10}).

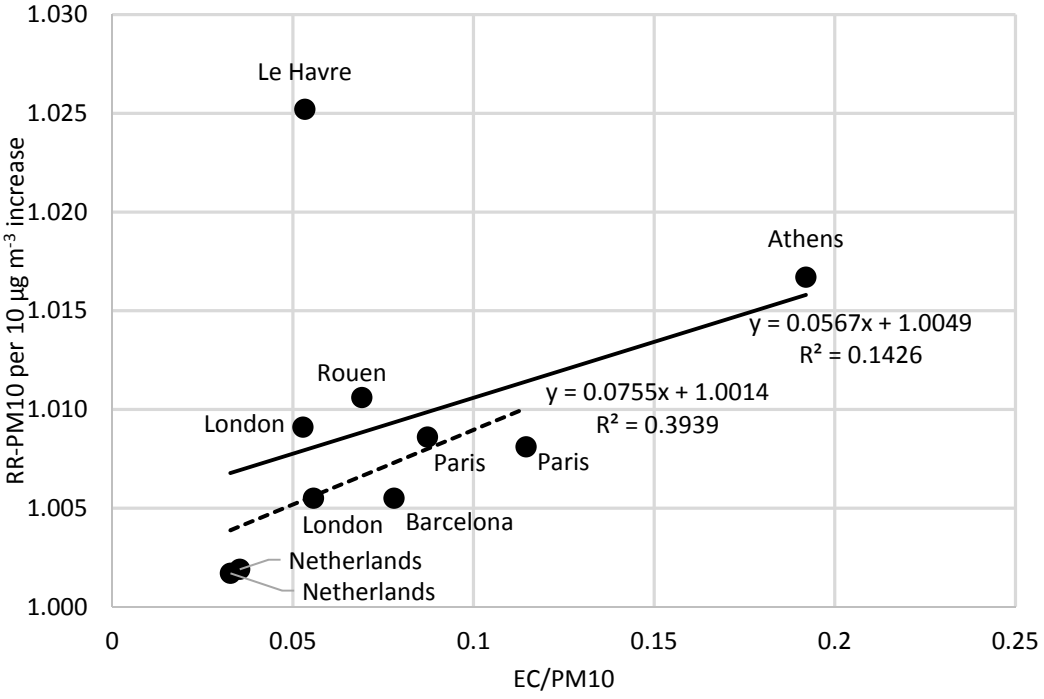

Figure S2. The same as Figure 5 except that the x-axis shows the proportion of EC in PM_{10} (EC/PM_{10}).

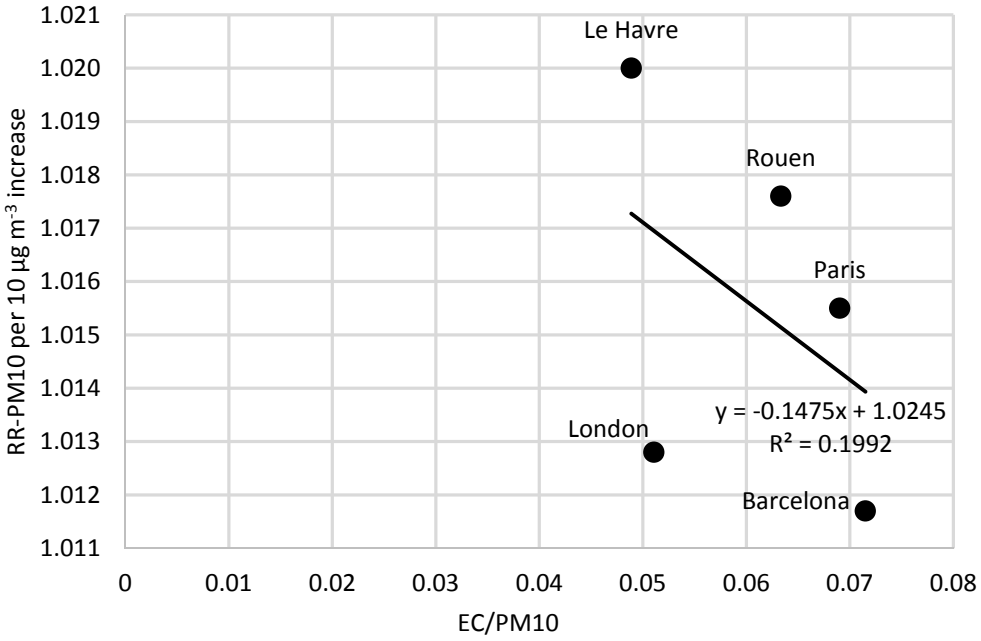

Figure S3. The same as Figure 6 except that the x-axis shows the proportion of EC in PM_{10} (EC/PM_{10}).

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