Supporting Information

Figure S1. Collecting samples from a sealed parking lot (left) and a sealed test plot (right).

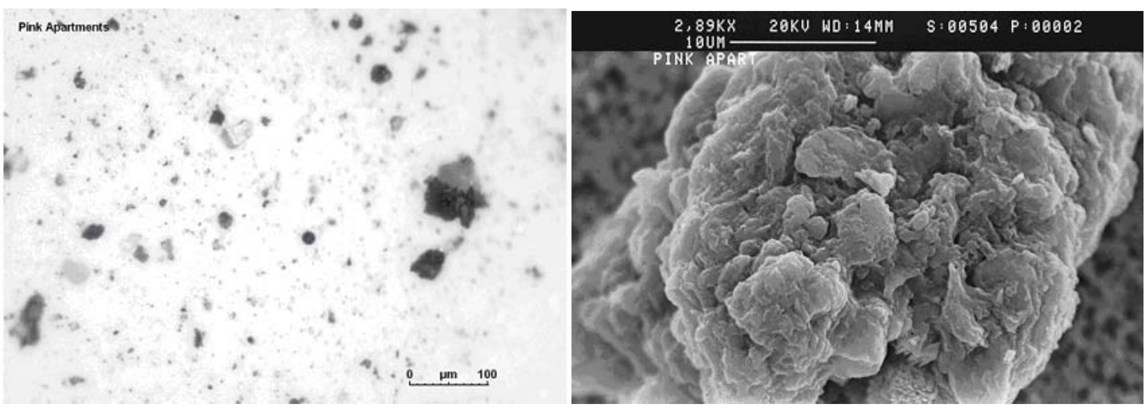

Figure S2. Abraded particles from a coal-tar emulsion sealed parking lot, observed by light (left) and electron (right) microscropy. The particles abrade in a wide range of sizes. Particles of quartz sand, which are added to the sealant for added traction, are also visible. A single spherical particle (left figure) is probably from atmospheric deposition of combustion particles, which have a typically spherical shape (*S1*, *S2*), quite distinct from the parking lot particles. (Images courtesy of Irène Zimmerlin, Université de Rouen, France.)

Table S1. Concentrations of PAHs analysed in commercially-available sealant products.

[All concentrations in mg/kg, dry weight; nd, non-detection; CT, coal-tar based emulsion; AS, asphalt-based emulsion.]

	Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo[a]-anthracene	Benzo[a]-pyrene	Benzo[b]-fluoranthene	Benzo[g,h,i]-perylene	Benzo[k]-fluoranthene
CT_P1	4000	nd	5150	4160	4600	4060	3190	2760
CT_P2	5380	nd	6770	5270	5980	5020	4040	3690
CT_P3	9230	nd	11800	9950	11100	9260	7660	6880
CT_P4	1590	nd	2020	1710	1840	1650	1280	1120
CT_P5	2050	nd	3050	2930	3080	2800	1830	1980
CT_P6	2560	nd	3810	3610	3690	2970	2250	2550
AS_P1	12.1	0.23	17	21.3	16.2	35.2	nd	nd
AS_P2	222	nd	364	422	347	314	140	297
AS_P3	53.9	nd	63.9	68	70.4	72.2	39.2	43.5

	Chrysene	Dibenz[a,h]-anthracene	Fluoran-thene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenan-threne	Pyrene
CT_P1	4160	nd	17500	3310	2470	8280	21200	13900
CT_P2	5310	nd	22900	4470	3170	10800	28600	17800
CT_P3	10100	670	41300	7860	5920	18500	49600	32200
CT_P4	1710	nd	6830	1340	1000	3350	8420	5240
CT_P5	3040	nd	8470	2010	1490	7630	10100	6630
CT_P6	3690	nd	10500	2510	1800	9630	12500	8120
AS_P1	22.2	nd	50.4	13	nd	39.9	60.7	49.6
AS_P2	427	nd	1510	266	135	241	1700	1100
AS_P3	71.5	nd	258	49.3	35.3	98.1	328	200

Table S2. Yields of ΣPAH and individual PAHs.

[All PAH yields in micrograms per square meter. nd, non-detection; CT, coal-tar emulsion sealant; AS, asphalt-emulsion sealant; UNSAS, unsealed asphalt pavement; UNSCON, unsealed concrete pavement. See manuscript Table 1 for additional site information.]

Site	Yield of sediment (g/m^2)	ΣPAH yield	Naph-thalene	Fluorene	Phenan-threne	Anthra-cene	Fluoran-thene	Pyrene	Benz[*a*]-anthracene
$CT_{TP}1$	0.062	110	0.75	1.2	19	3.1	32	21	6.9
$CT_{TP}2$	0.051	61	0.33	.40	7.6	1.5	16	12	5.1
AS_{TP}	0.067	6.4	nd	nd	.87	0.34	1.6	1.1	.62
UNS_{TP}	0.061	25	0.14	0.12	2.0	0.39	6.8	5.2	2.7
$CT_{TP}1$	0.026	14	.15	0.15	1.7	.26	4.2	2.9	1.0
$CT_{TP}2$	0.036	140	.86	1.2	17	2.8	40	31	13
AS_{TP}	0.092	3.7	.05	0.06	.49	.09	1.0	0.64	0.17
UNS_{TP}	0.069	1.7	nd	0.03	.15	.04	0.42	0.33	0.19
$CT_{TP}1$	0.013	6.0	.04	.03	0.87	.06	2.1	1.3	0.21
$CT_{TP}2$	0.026	3.7	nd	.04	0.31	.06	1.0	0.76	0.37
AS_{TP}	0.059	1.6	nd	.09	0.16	nd	0.35	0.27	0.17
UNS_{TP}	0.036	0.50	nd	nd	0.05	nd	0.11	0.09	0.08
$AS_{PL}1$	0.30	77	1.4	1.1	8.3	1.6	22	12	4.4
$AS_{PL}1$ dup	0.30	71	1.2	.98	7.1	1.4	20	12	4.4
$AS_{PL}2$	0.32	270	1.5	.94	11	2.3	87	58	16
$AS_{PL}3$	1.2	920	nd	9.5	110	14	310	190	50
$CT_{PL}1$	0.11	220	1.9	1.6	31	2.3	63	50	12
$CT_{PL}2$	0.2	1,800	2.8	6.4	190	15	540	400	120
$CT_{PL}3$	0.97	1,900	6.5	4.5	67	14	510	410	180
$CT_{PL}4$	0.087	110	0.57	0.31	8.2	1.0	31	24	7.5
$CT_{PL}5$	0.24	130	0.41	0.54	5.1	1.2	34	24	10
$CT_{PL}6$	0.20	1,500	2.6	1.7	63	6.9	450	370	140
$CT_{PL}6$ dup	0.20	880	1.8	1.1	37	4.1	260	200	73
$UNSAS_{PL}1$	0.41	26	1.2	0.91	2.7	.87	5.8	5.0	3.0
$UNSAS_{PL}1$	0.46	3.3	nd	nd	0.33	nd	0.78	0.74	nd
$UNSCON_{PL}1$	0.21	16	0.32	0.28	1.2	0.32	3.8	3.2	1.4
$UNSCON_{PL}2$	0.18	12	0.20	0.18	0.98	0.23	3.0	2.5	1.0

Supporting Information Table S2, cont.

Site name	Chrysene	Benzo[*a*]-pyrene	Dibenz-[*a,h*]-anthracene	Coronene
$CT_{TP}1$	12	6.2	1.1	1.2
$CT_{TP}2$	9.1	5.1	1.1	1.3
AS_{TP}	1.1	0.81	nd	0.49
UNS_{TP}	3.7	3.2	0.68	0.80
$CT_{TP}1$	1.8	1.1	0.37	0.31
$CT_{TP}2$	21	14	3.0	3.4
AS_{TP}	0.55	0.35	0.15	0.20
UNS_{TP}	0.26	0.24	0.09	0.10
$CT_{TP}1$	1.0	0.37	0.08	0.13
$CT_{TP}2$	0.66	0.45	0.13	0.13
AS_{TP}	0.22	0.36	nd	0.23
UNS_{TP}	0.07	0.12	nd	0.07
$AS_{PL}1$	15	6.2	3.0	4.4
$AS_{PL}1$ dup	14	6.5	2.9	3.6
$AS_{PL}2$	62	22	6.2	7.8
$AS_{PL}3$	140	66	28	34
$CT_{PL}1$	33	18	3.4	5.6
$CT_{PL}2$	300	160	34	40
$CT_{PL}3$	450	240	55	70
$CT_{PL}4$	24	12	2.4	3.4
$CT_{PL}5$	29	15	3.7	4.4
$CT_{PL}6$	270	170	45	43
$CT_{PL}6$ dup	160	100	18	22
$UNSAS_{PL}1$	2.8	2.9	nd	1.8
$UNSAS_{PL}1$	0.46	1.0	nd	0.69
$UNSCON_{PL}1$	2.1	1.6	0.76	0.68
$UNSCON_{PL}2$	1.7	1.3	0.50	0.61

Supporting Information Table S3. Watershed characteristics.

			Percentage of Watershed						
Watershed	Latitude and longitude (deg min sec)	Area (km^2)	Total urban	Resi-dential	Commer-cial	Indus-trial	Trans-portation (includes parking lots)	Parking lots (all types)	Sealed parking lot
Lake Como Inflow	N 32 43 45 W 97 24 08	1.86	93.3	51.7	10.5	2.21	28.9	7.58	1.19
Echo Lake Inflow	N 32 42 03 W 97 19 09	2.13	98.3	32.6	9.23	25.4	31.3	6.35	2.10
Fosdic Lake Inflow	N 32 45 10 W 97 15 27	0.84	96.7	61.2	16.1	0	19.4	2.87	1.03
Williamson Creek	N 30 13 16 W 97 47 36	78.0	63.4	38.6	8.0	2.2	14.6	4.5	1.9

References

(S1) Griffen, J.J.; Goldberg, E.D. Sphericity as a characteristic of solids from fossil fuel burning in a Lake Michigan sediment. *Geochim. Cosmochim. Acta* **1981,** *45*, 763-769.

(S2) Motelay-Massei, A. Contribution du compartiment atmosphérique au transfert des HAP dans le basin versant aval de la Seine: Bilan à l'échelle de deux basins versants expérimentaux. Ph.D. Dissertation, Université Paris VI, 2003.