Supplementary Materials

Concomitant determination of PAH, PCBs, and phthalates in indoor air and dust from residential houses in the Strasbourg region of France

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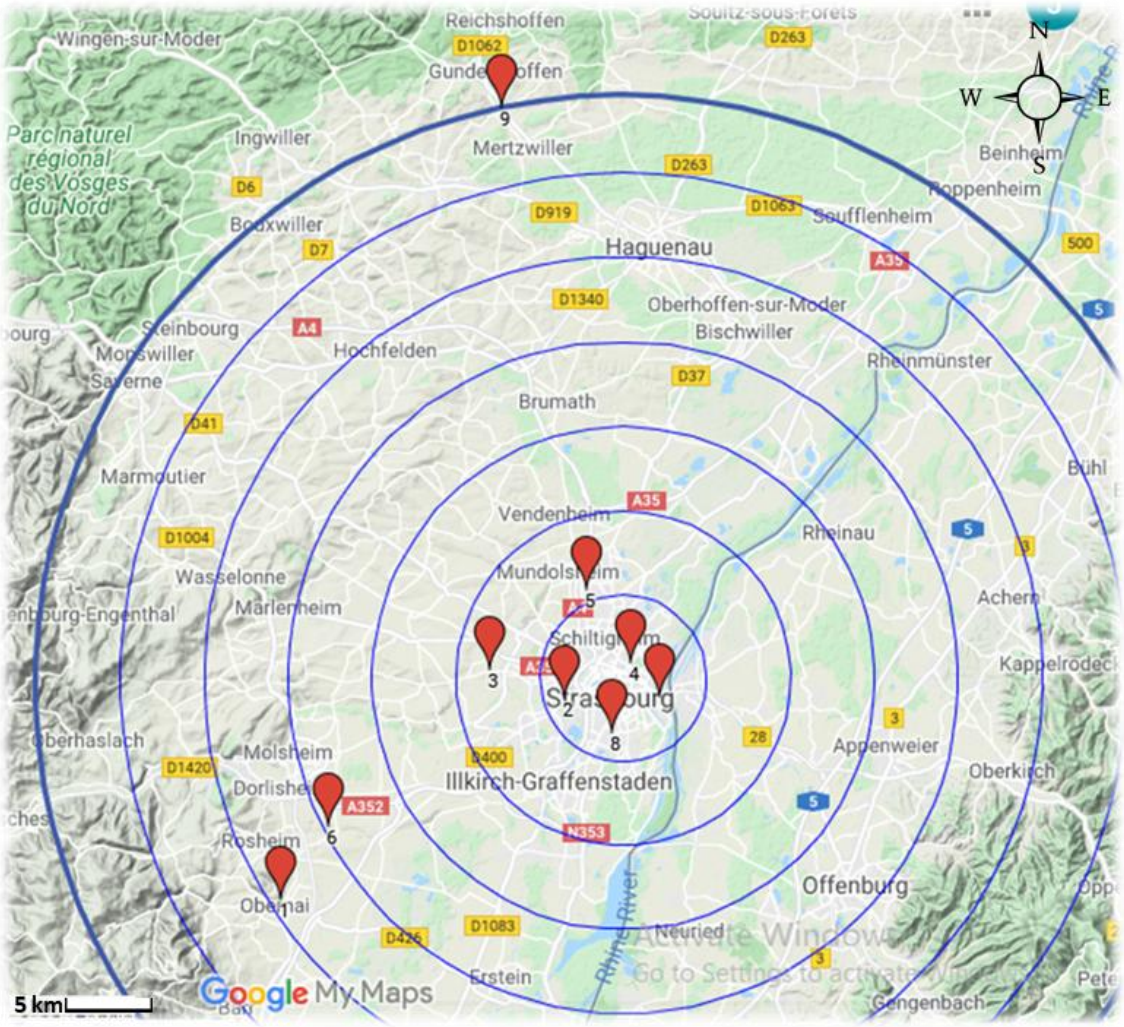

Supplementary Figure 1. Geographical distribution of the targeted sites (houses are represented by red pins).

Supplementary Table 1. Sampling Sites' details.

Reference	ZIP	City	Location type	Latitude	Longitude	Dwelling type	Building year	Floors	Ventilation type	Heating type	N. of inhabitants	Notes
1	67348	Obernai	Rural	48.464100	7.485700	House	1930	2	Natural	Oil	2	Two floors, but the first one is the only used - elderly couple, non-smoker
2	67000	Strasbourg	Urban	48.572200	7.714400	Apartment	1930	1	Natural	Gas	3	Lots of traffic on the road, bus stops under the windows - Couple and a child, non-smokers
3	67350	Oberscha-effolsheim	Urban	48.587600	7.654200	House	1980	2	Mechanical	Gas	3	House on the edge of the fields, but in the city: more peri-urban than urban, but being the only dwelling in this case, choice to define as urban for the statistics - Couple and a child, non-smoker
4	67482	Strasbourg	Urban	48.590700	7.768100	Apartment	1970	1	Natural	Gas	1	Tenant, near parking - Single person, non-smoker
5	67000	Strasbourg	Urban	48.629000	7.732000	House	1980	NA	NA	NA	NA	NA
6	67172	Griesheim-prés-Molsheim	Rural	48.503600	7.524000	House	1980	3	Mechanical	Oil + wood	4	Bathroom air extraction, no more oil heating, old boiler room transformed into a bedroom, in the air corridor of Entzheim airport - Couple and two children, non-smokers
7	67000	Strasbourg	Urban	48.573000	7.792000	Apartment	1974	NA	NA	NA	NA	NA
8	67000	Strasbourg	Urban	48.331000	7.451100	House	1930	4	Natural	Gas	5	Residential area without too much traffic, significant treatment of the wood frame in the past (lindane?) - Couple and three children (including a teenager), non-smokers
9	67292	Mietesheim	Rural	48.878500	7.639300	Apartment	1920	4	Natural	Wood	6	Couple and four children (including two babies), smoking father

NA: Not Assigned,

Supplementary Table 2. Retention time (RT), precursor ions and product ions with associated dissociation energy value in GC-MSMS for each organic compound used

	Compounds	RT (mn)	Precursor ions (m/z)	Excitation voltage (V)	Product ions (m/z)
ISTDs	naphthalene d8	9.25	136	1.5	108/132/84/82/80
	DEHP d4	24.43	153	1	153
PAHs	naphthalene	9.31	128	1.2	102/126/76/77/78
	acenaphthene	10.83	153	1.3	150/151/126
	fluorene	11.47	165	1.2	163/139/115
	phenanthrene	13.26	178	1.2	152/176/151
	anthracene	13.35	178	1.2	152/176/151
	fluoranthene	17.23	202	1.3	200
	pyrene	18.39	202	1.2	200
	benzo[a]anthracene	25.75	228	1.2	226/202
	chrysene	25.92	228	1.2	226/202
	benzo[b]fluoranthene	29.57	252	1.3	250/226
	benzo[k]fluoranthene	29.71	252	1.3	250/226
	benzo[e]pyrene	30.75	252	1.3	250/226
	benzo[a]pyrene	30.98	252	1.3	250/226
	dibenzo[a, h]anthracene	34.43	278	1.5	276
	indeno[1,2,3]pyrene	34.45	276	1.4	274
	benzo[g,i,h]perylene	35.93	276	1.4	274
PCBs	PCB 18	12.73	256	1.2	186/221
	PCB 31	13.78	256	1.2	186/151/150

	PCB 28	13.85	256	1.2	186/151/150
	PCB 52	14.47	292	1.2	222/220/257/255
	PCB 44	15.03	292	1.2	222/220/257/255
	PCB 70	16.42	292	1.3	222/220/185/150
	PCB 101	16.93	326	1.2	256/254/291
	PCB 81	18.82	292	1.3	222/220/185/150
	PCB 149	19.45	360	1.2	290/288/325/323
	PCB 123	19.94	326	1.3	256/254
	PCB 153	20.53	360	1.3	290/288
	PCB 114	20.49	326	1.3	256/254
	PCB 118	20.18	326	1.3	256/254
	PCB 105	21.36	326	1.4	256/254
	PCB 138	22.13	360	1.3	290/288/325
	PCB 126	23.59	326	1.4	256/254
	PCB 167	24.16	360	1.5	290/288/218
	PCB 156	25.33	360	1.5	290/288/218
	PCB 180	25.56	396	1.3	324/326/361
	PCB 157	25.44	360	1.5	290/288/218
	PCB 169	26.66	360	1.5	290/288/218
	PCB 189	27.42	396	1.8	326/324
Phthalates	DMP	10.35	163	1	133/105/135
	DEP	11.01	149	1	121/93/131
	DBP	12.72	149	1	121/93
	DIBP	13.87	149	1	121/93

	DPP	16.41	149	1	121/93
	BBP	20.80	149	1	121/93/126
	DEHP	24.86	149	1	121/93/122

Supplementary Table 3. ATD-GC/MSMS method performance and validation for organic compounds analysis

	Compounds	Equation	R2	CV %	LOD	LOQ	Recovery (%)
PAHs	naphthalene	$Y = 0.616764\ x$	0.9893	13	0.09	0.03	89.5
	acenaphthene	$Y = 0.583448\ x$	0.9999	1.9	0.09	0.03	85.7
	fluorene	$Y = 4.29551\ x + 0.0394102\ x^2$	0.9985	2	0.09	0.03	126.7
	phenanthrene	$Y = 0.03390\ x + 9.76278e^{-005}\ x^2$	0.9985	9.9	0.09	0.03	98.5
	anthracene	$Y = 0.0516385\ x$	0.9966	8	0.09	0.03	106.8
	fluoranthene	$Y = 2.28229\ x + 0.347818\ x^2$	0.9996	3.4	0.15	0.05	62
	pyrene	$Y = 83.0575\ x + 4.90224\ x^2$	0.9992	14.4	0.15	0.05	61.9
	benzo[a]anthracene	$Y = 3.77313\ x$	0.9959	9.2	0.15	0.05	64.3
	chrysene	$Y = 66.2729\ x + 0.0710232\ x^2$	0.9978	32.8	0.15	0.05	57.8
	benzo[b]fluoranthene	$Y = 1.76584\ x + 0.708726\ x^2$	0.9995	13.4	0.15	0.05	72.3
	benzo[k]fluoranthene	$Y = 25.1649\ x + 0.712638\ x^2$	0.9991	21.3	0.15	0.05	68.7
	benzo[e]pyrene	$Y = 10.3666\ x + 0.694201\ x^2$	0.9972	18.1	0.25	0.08	52.9
	benzo[a]pyrene	$Y = 0.466507\ x + 1.82594\ x^2$	0.9995	13.2	0.25	0.08	43.6
	dibenzo[a,h]anthracene	$Y = 0.0579948\ x$	0.9999	12.8	0.25	0.08	39.2
	indeno[1,2,3]pyrene	$Y = 1.58456\ x + 0.0058964\ x^2$	0.9995	21	0.25	0.08	48.5
	benzo[g,i,h]perylene	$Y = 1.97786\ x + 0.782992\ x^2$	0.9977	26.5	0.25	0.08	34.3
PCBs	PCB 18	$Y = 0.420817\ x + 0.0138768\ x^2$	0.9982	22.4	0.04	0.01	63.4
	PCB 31	$Y = 0.416784\ x + 0.0138563\ x^2$	0.9982	7.9	0.04	0.01	78.2
	PCB 28	$Y = 0.0276346\ x + 0.00100019\ x^2$	0.9972	10.4	0.04	0.01	59.5
	PCB 52	$Y = 0.0158671\ x + 0.0142522\ x^2$	0.9999	17	0.04	0.01	90.7
	PCB 44	$Y = 12.1124\ x + 0.540317\ x^2$	0.9729	5.2	0.04	0.01	61.1
	PCB 70	$Y = 0.158359\ x + 0.00168774\ x^2$	0.9979	20.9	0.04	0.01	64.1
	PCB 101	$Y = 0.511832\ x + 0.0149724\ x^2$	0.9982	20.6	0.04	0.01	85.2

	PCB 81	$Y = 0.00703438\ x + 3.15341e^{-005}\ x^2$	0.9976	27.5	0.04	0.01	94.4
	PCB 149	$Y = 2.376\ x + 0.556923\ x^2$	0.9999	14.7	0.04	0.01	59.9
	PCB 123	$Y = 0.0689715\ x + 0.0196883\ x^2$	0.9999	18.9	0.04	0.01	113.4
	PCB 153	$Y = 0.937165\ x + 0.0460618\ x^2$	0.9991	18.6	0.04	0.01	102.3
	PCB 114	$Y = 0.86283\ x + 0.0193347\ x^2$	0.9997	22.9	0.04	0.01	105.2
	PCB 118	$Y = 0.0590285\ x + 0.00503843\ x^2$	0.9998	16.9	0.09	0.03	96.1
	PCB 105	$Y = 3.72731\ x + 0.230528\ x^2$	0.9993	11.1	0.09	0.03	71.3
	PCB 138	$Y = 9.48637\ x + 0.390604\ x^2$	0.9988	5.3	0.09	0.03	68.9
	PCB 126	$Y = 3.9681\ x + 0.228819\ x^2$	0.9993	17.5	0.09	0.03	108.6
	PCB 167	$Y = 5.22717\ x + 0.303399\ x^2$	0.9992	4.2	0.09	0.03	76
	PCB 156	$Y = 4.81961\ x + 0.315149\ x^2$	0.9993	18	0.09	0.03	60.4
	PCB 180	$Y = 4.80883\ x + 0.326963\ x^2$	0.9994	5.9	0.09	0.03	74.5
	PCB 157	$Y = -3.45235\ x + 0.573913\ x^2$	0.999	2	0.09	0.03	102.4
	PCB 169	$Y = 0.812695\ x + 0.0719567\ x^2$	0.9996	38.4	0.09	0.03	85.4
	PCB 189	$Y = 1.24203\ x + 0.0235986\ x^2$	0.9994	16.8	0.09	0.03	72.9
Phthalates	DMP	$Y = 0.0567936\ x + 0.000260551\ x^2$	0.9996	19.9	0.09	0.03	114.8
	DEP	$Y = 0.0192154\ x + 8.60562e^{-005}\ x^2$	0.9968	7	0.09	0.03	102.3
	DBP	$Y = -0.818309\ x + 0.162187\ x^2$	0.9999	4.1	0.09	0.03	109.6
	DIBP	$Y = 0.00245352\ x + 0.00350707\ x^2$	0.9999	9.7	0.09	0.03	99.4
	DPP	$Y = -0.06246\ x + 0.00616563\ x^2$	0.9943	17.2	0.09	0.03	100.4
	BBP	$Y = 0.0231804\ x$	0.9996	11.7	0.09	0.03	99.9
	DEHP	$Y = 0.114715\ x$	0.9991	10.3	0.09	0.03	122.5