

Supporting Information

Variations of Flame Retardant, Polycyclic Aromatic Hydrocarbon, and Pesticide Concentrations in Chicago's Atmosphere Measured using Passive Sampling

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Instrumental Analysis of the Halogenated Flame Retardants

An Agilent 7890 series gas chromatograph (GC) coupled an Agilent 5975C mass spectrometer (MS) operating in the electron capture negative ionization (ECNI) mode, with methane as the reagent gas, was used. The mass spectrometer ion source and quadrupole temperatures were maintained at 200 and 140 °C, respectively. One μL sample was injected in the pulsed splitless mode at 240 °C. Chromatographic resolution was achieved with an Rtx-1614 (15 m $\times$ 250 μm i.d., 0.1 μm film thickness) fused silica capillary GC column (Restek Corporation, Bellefonte, CA). The carrier gas was helium (99.999%; Liquid Carbonic, Chicago) regulated at a constant flow of 1.5 mL/min. The GC/MS transfer line was maintained at 320 °C. The GC oven temperature was programmed as follows: 100 °C for 2 min, 25 °C/min to 250 °C, 3 °C/min to 270 °C, 25 °C/min to 320 °C, and 320 °C for 9 min.

Instrumental Analysis of the Organophosphorous Esters

An Agilent 6890 series GC coupled to an Agilent 5973 MS operating in the electron ionization (EI) mode was utilized. The mass spectrometer ion source and electron energy were maintained at 230 °C and 70 eV, respectively. Injections were performed in the pulsed splitless mode at 280 °C for one μL samples. Chromatographic resolution was achieved with a DB-5MS Ultra Inert capillary column (30 m $\times$ 250 μm i.d., 0.25 μm film thickness, Agilent Technologies, Santa Clara, CA). The carrier gas was helium (99.999%; Liquid Carbonic, Chicago) regulated at a constant flow of 1.5 mL/min. The GC/MS transfer line was maintained at 300 °C. For analysis of OPEs, the GC oven temperature was programmed as follows: 70 °C for 3 min, 10 °C/min to 170 °C, held for 5 min, 10 °C/min to 230 °C, held for 5 min, 5 °C/min to 250 °C, 10 °C/min to 300 °C, and 300 °C for 4 min.

Instrumental Analysis of the Polycyclic Aromatic Hydrocarbons

An Agilent 6890 series GC coupled to an Agilent 5973 MS operating in EI mode was employed. The mass spectrometer ion source and electron energy were maintained at 230 °C and 70 eV, respectively. Injections were performed in the pulsed splitless mode at 280 °C for one μL samples. Chromatographic resolution was achieved with a DB-5MS Ultra Inert capillary column (30 m $\times$ 250 μm i.d., 0.25 μm film thickness, Agilent Technologies, Santa Clara, CA). The carrier gas was helium (99.999%; Liquid Carbonic, Chicago) regulated at a constant flow of 1.5 mL/min. The GC/MS transfer line was maintained at 280 °C. For analysis of PAHs, the GC oven temperature was programmed as follows: 70 °C for 3 min, 30 °C/min to 280 °C, held for 6 min, 30 °C/min to 300 °C, and held for 10 min.

Instrumental Analysis of the Pesticides

A Hewlett-Packard 6890 GC equipped with ^{63}Ni electron capture detector was utilized with a DB-5 column (60 m $\times$ 250 μm i.d. with a 0.1 μm film thickness, J&W Scientific). Hydrogen and nitrogen, ultrapure grade, are used as the carrier and detector make-up gases, respectively. The total flow is maintained at 70 mL/min with a detector gas flow of 40 mL/min. The GC oven temperature is 100 °C for 1 min., 1 °C/min to 240 °C, 10 °C/min to 280 °C, and held for 20 min.

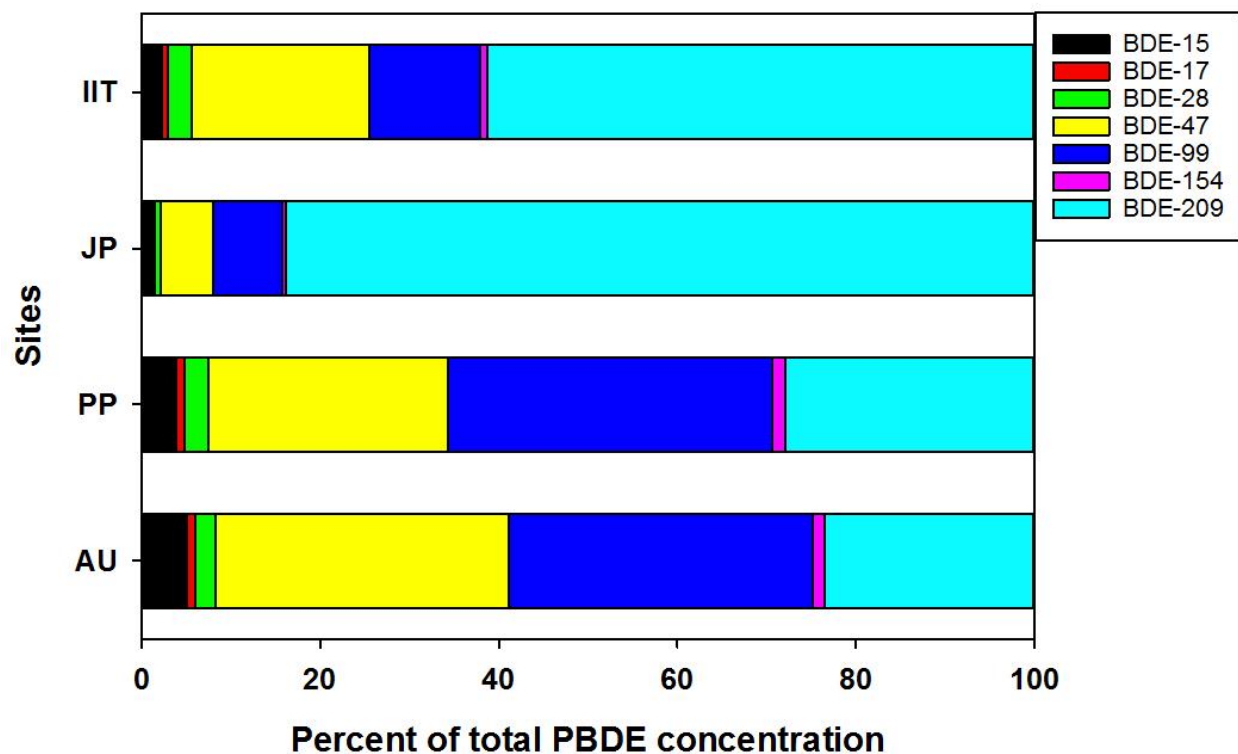


Figure S1: PBDE congener profiles for the sites with the highest total PBDE concentrations [Illinois Institute of Technology (IIT) and Jefferson Park (JP)] and for the sites with the lowest total PBDE concentration [Portage Park (PP) and Aurora (AU)].

Table S1: Information on site locations, sample numbers, and specific collection dates.

Site ID	Site Description	Latitude	Longitude	N	N (for OPEs)	Collection Dates	Distance from IIT (km)
AU	Aurora	41.7847	-88.3294	12	10	08/12 – 12/13	58.7
CN	Channahon Park	41.4685	-88.1875	11	11	07/12 – 09/13	62.0
IIT	Illinois Institute of Technology	41.8344	-87.6247	13	10	01/12 – 11/13	0.0
JP	Jefferson Park	41.9681	-87.7629	17	13	01/12 – 01/14	18.8
JT	Joliet Township	41.5299	-88.1249	12	12	07/12 – 11/13	53.6
JW	Jardine Water Plant	41.8925	-87.6114	18	18	10/12 – 12/13	6.6
LM	Lemont	41.6681	-87.9906	13	13	07/12 – 12/13	35.6
NC	Naperville City Hall	41.7710	-88.1530	13	13	08/12 – 12/13	44.4
PP	Portage Park	41.9551	-87.7622	16	13	01/12 – 12/13	17.6
SL	Schiller Park	41.9547	-87.8650	12	12	09/12 – 12/13	24.0
SP	Sauganash Park	41.9884	-87.7374	15	12	01/12 – 12/13	19.5
VM	Village of McCook	41.8004	-87.8325	13	13	08/12 – 12/13	17.6
WP	Winnemac Park	41.9742	-87.6844	13	11	03/12 – 12/13	16.3

Table S2: List of analytes, their abbreviations, and selected ions monitored.

Name	Abbreviation	Ions Monitored (m/z)
Brominated diphenyl ethers	PBDEs	79, 81 ^a
Tetrabromo- <i>p</i> -xylene	pTBX	79, 81
Pentabromoethylbenzene	PBEB	79, 81
Pentabromobenzene	PBBZ	79, 81
Hexabromobenzene	HBB	79, 81
2-Ethylhexyl-2,3,4,5-tetrabromobenzoate	TBB	79, 81 ^b
1,2- <i>bis</i> (2,4,6-Tribromophenoxy)ethane	TBE	79, 81
<i>bis</i> (2-Ethylhexyl)tetrabromophthalate	TBPH	79, 81 ^b
Hexabromocyclododecanes	HBCDs	79, 81
<i>syn</i> - and <i>anti</i> -Decchlorane Plus	DP	652, 654
Decabromodiphenyl ethane	DBDPE	79, 81
Tributyl phosphate	TnBP	199
<i>tris</i> (2-Chloroethyl) phosphate	TCEP	249
<i>tris</i> (1-Chloro-2-propyl) phosphate	TCPP	125
Triphenyl phosphate	TPP	326
<i>tris</i> (1,3-Dichloro-2-propyl) phosphate	TDCPP	191
Tri(butoxyethyl) phosphate	TBEP	85
2-Ethylhexyl diphenyl phosphate	EHDP	251
<i>tris</i> (2-Ethylhexyl) phosphate	TEHP	99
Tri- <i>o</i> -tolyl phosphate	TOTP	368
Tri- <i>p</i> -tolyl phosphate	TPTP	368
<i>tris</i> (2-Isopropylphenyl) phosphate	TIPPP	452
<i>tris</i> (3,5-Dimethylphenyl) phosphate	TDMPP	410
<i>tris</i> (4-Butylphenyl) phosphate	TBPP	479
Fluorene		166, 165
Phenanthrene	Phen	178, 176
Anthracene		178, 179
Fluoranthene		202, 203
Pyrene		202, 203
Retene		219, 234
Benz[a]anthracene	BaA	228, 226
Chrysene+ triphenylene	Chry	228, 226
Benzo[b]fluoranthene	BkF	252, 253
Benzo[k]fluoranthene	BkF	252, 253
Benzo[e]pyrene	BeP	252, 253
Benzo[a]pyrene	BaP	252, 253
Indeno[1,2,3,cd]pyrene	I123P	276, 277
Dibenzo[a,h]anthracene		278, 279
Benzo [g,h,i]perylene	BgP	276, 277
Coronene	Cor	300, 301
a. Exceptions were m/z 562 and 564 for BDE-203; m/z 487 and 489 for BDE-209; and m/z 495 and 497 for ¹³ C ₁₂ -BDE-209.		
b. Confirmation ions were m/z 357 and 359 for TBB; and m/z 462 and 464 for TBPH.		

Table S3: Amount of field blanks measured with their corresponding, average (ng), and standard error.

Compound	N	Average (ng)	Std. Error
BDE-15	23	0.05	0.03
BDE-17	23	0.02	0.01
BDE-28	23	0.04	0.02
BDE-47	23	0.85	0.41
BDE-99	23	0.99	0.56
BDE-153	23	0.19	0.09
BDE-154	23	0.04	0.02
BDE-209	23	1.18	0.84
pTBX	23	0.01	0.01
PBBZ	23	0.10	0.09
PBEB	23	0.02	0.01
HBB	23	0.02	0.01
EHTBB	23	0.48	0.14
BEHTBP	23	0.47	0.20
HBCD	23	0.49	0.41
TBE	23	0.18	0.12
DBDPE	23	1.71	0.65
PBDE 47 & 99	23	1.84	0.96
TBB & TBPH	23	0.94	0.33
DP	23	0.21	0.08
PBDEs	23	4.60	1.97
TnBP	21	4.49	1.87
TCEP	21	0.84	0.54
TCPP	21	5.83	4.49
TPhP	21	4.66	1.61
TDCPP	21	0.00	0.00
TBEP	21	12.68	24.60
EHDP	11	1.25	1.25
TEHP	21	3.23	1.49
TOTP	21	1.60	1.60
T35DMPP	21	0.24	0.24

Compound	N	Average (ng)	Std. Error
fluorene	23	4.41	2.16
phenanthrene	23	9.06	2.82
anthracene	23	0.42	0.13
fluoranthene	23	2.85	1.06
pyrene	23	2.37	0.64
retene	23	3.62	0.90
benz[a]anthracene	23	0.71	0.40
triphenylene+chrysene	23	0.32	0.14
benzo[b]fluoranthene	23	0.19	0.11
benzo[k]fluoranthene	23	0.24	0.14
benzo[e]pyrene	23	0.19	0.13
benzo[a]pyrene	23	0.07	0.04
indeno[1,2,3-cd]pyrene	23	0.31	0.17
dibenz[a,h]anthracene	23	0.03	0.03
benzo[ghi]perylene	23	0.92	0.40
coronene	23	0.00	0.00
PAHs	23	25.71	6.35
A-HCH	23	0.18	0.15
G-HCH	23	0.23	0.08
G-Chlordane	23	1.27	0.79
A-Chlordane	23	1.33	0.79
T-Nona	23	0.30	0.18
Endosulfan I	23	0.70	0.46
Endosulfan II	23	0.25	0.12
Endosulfan II	23	0.25	0.12
O,P'-DDD	23	0.17	0.06
P,P'-DDD	23	0.10	0.05
P,P'-DDT	23	0.22	0.09
Endosulfans	23	1.06	0.58
Chlordanes	23	2.90	1.76
DDTs	23	0.49	0.10

Table S4: Arithmetic means $\pm$ their standard errors with their geometric averages, ANOVA results, and detection frequency below of the concentrations for flame retardants (in pg/m³).

Site ID	Group	BDE-47		BDE-99		BDE-209		PBDEs		pTBX		PBEB		PBBZ		HBB	
AU	Far	6.36	$\pm$ 0.63	6.29	$\pm$ 0.53	4.95	$\pm$ 1.31	13.6	$\pm$ 2.21	0.10	$\pm$ 0.01	0.14	$\pm$ 0.02	2.99	$\pm$ 0.92	0.56	$\pm$ 0.13
		5.98	b 92	6.20	a 33	4.27	c 50	11.0	b 100	0.09	cd 58	0.13	g 83	1.85	cd 92	0.40	bcd 92
CN	Far	114	$\pm$ 69.6	321	$\pm$ 161	47.3	$\pm$ 24.6	299	$\pm$ 176	0.11	$\pm$ 0.03	0.15	$\pm$ 0.04	26.8	$\pm$ 5.81	2.77	$\pm$ 0.66
		17.3	ab 64	68.9	a 36	15.0	abc 64	20.1	ab 100	0.09	cd 55	0.12	fg 55	22.9	a 100	1.89	a 91
IIT	Near	44.0	$\pm$ 17.4	17.1	$\pm$ 3.12	132	$\pm$ 32.6	210	$\pm$ 35.7	0.33	$\pm$ 0.07	0.85	$\pm$ 0.15	2.80	$\pm$ 0.70	0.98	$\pm$ 0.23
		22.4	a 100	14.1	a 85	69.5	ab 100	153	a 100	0.28	ab 92	0.71	b 100	2.07	cd 100	0.74	abc 92
JP	Near	9.81	$\pm$ 2.98	20.1	$\pm$ 11.7	299	$\pm$ 116	275	$\pm$ 101	0.24	$\pm$ 0.03	0.60	$\pm$ 0.09	1.62	$\pm$ 0.28	0.31	$\pm$ 0.05
		7.09	ab 88	9.13	a 47	100	a 82	73.1	ab 100	0.23	ab 88	0.51	bc 94	1.44	cd 94	0.29	d 94
JT	Far	46.4	$\pm$ 24.0	96.4	$\pm$ 62.8	92.6	$\pm$ 79.0	207	$\pm$ 140	0.06	$\pm$ 0.02	0.17	$\pm$ 0.02	8.65	$\pm$ 1.07	1.07	$\pm$ 0.20
		13.3	ab 75	21.5	a 58	12.3	bc 58	20.8	ab 100	0.05	d 33	0.16	efg 58	7.87	b 92	0.91	ab 75
JW	Near	11.1	$\pm$ 2.94	72.3	$\pm$ 47.5	38.8	$\pm$ 25.7	92.1	$\pm$ 53.0	0.17	$\pm$ 0.02	0.54	$\pm$ 0.06	1.56	$\pm$ 0.26	0.50	$\pm$ 0.08
		8.42	ab 83	18.9	a 50	12.0	c 67	25.6	ab 100	0.14	bcd 89	0.48	bc 100	1.23	cd 100	0.42	bcd 94
LM	Far	12.3	$\pm$ 4.11	59.3	$\pm$ 37.4	19.2	$\pm$ 5.87	87.9	$\pm$ 45.7	0.21	$\pm$ 0.05	0.38	$\pm$ 0.10	3.12	$\pm$ 0.52	0.47	$\pm$ 0.05
		9.39	ab 85	20.1	a 54	11.7	c 85	32.7	ab 100	0.16	bcd 92	0.32	cdef 100	2.62	c 100	0.44	bcd 92
NC	Far	6.54	$\pm$ 0.90	141	$\pm$ 122	27.5	$\pm$ 17.0	139	$\pm$ 94.6	0.11	$\pm$ 0.01	0.23	$\pm$ 0.03	1.13	$\pm$ 0.17	0.37	$\pm$ 0.04
		6.61	ab 100	15.6	a 46	10.4	c 85	29.6	ab 100	0.10	cd 85	0.20	efg 100	1.00	d 92	0.35	bcd 85
PP	Near	7.47	$\pm$ 1.65	11.1	$\pm$ 3.63	8.34	$\pm$ 2.26	24.6	$\pm$ 7.05	0.25	$\pm$ 0.03	0.57	$\pm$ 0.09	1.23	$\pm$ 0.21	0.78	$\pm$ 0.43
		5.94	b 94	8.05	a 56	6.19	c 75	16.0	b 100	0.22	abc 94	0.48	bc 94	1.13	cd 94	0.38	bcd 94
SL	Near	7.12	$\pm$ 1.09	56.0	$\pm$ 44.1	29.1	$\pm$ 9.68	134	$\pm$ 85.0	0.20	$\pm$ 0.04	0.40	$\pm$ 0.04	1.61	$\pm$ 0.30	0.46	$\pm$ 0.05
		7.11	ab 100	11.9	a 83	14.7	bc 92	44.7	ab 100	0.17	bcd 83	0.42	bcde 100	1.38	cd 100	0.42	bcd 92
SP	Near	13.9	$\pm$ 2.27	10.7	$\pm$ 3.47	10.1	$\pm$ 2.76	38.1	$\pm$ 11.8	0.45	$\pm$ 0.07	26.0	$\pm$ 6.63	1.91	$\pm$ 0.25	0.44	$\pm$ 0.08
		11.4	ab 93	7.60	a 60	7.02	c 60	28.7	ab 100	0.39	a 87	21.4	a 93	1.69	cd 93	0.34	cd 93
VM	Near	18.2	$\pm$ 9.35	22.0	$\pm$ 12.5	12.1	$\pm$ 3.00	45.0	$\pm$ 20.5	0.28	$\pm$ 0.08	0.22	$\pm$ 0.03	1.56	$\pm$ 0.37	0.31	$\pm$ 0.04
		9.66	ab 77	10.5	a 69	9.45	c 62	21.6	ab 100	0.22	abc 85	0.19	defg 77	1.28	cd 85	0.28	d 85
WP	Near	13.0	$\pm$ 3.61	28.5	$\pm$ 12.3	28.4	$\pm$ 15.0	69.1	$\pm$ 22.8	0.23	$\pm$ 0.02	0.53	$\pm$ 0.10	1.24	$\pm$ 0.19	0.30	$\pm$ 0.04
		9.32	ab 92	13.4	a 77	11.1	c 85	33.7	ab 100	0.22	abc 92	0.45	bcd 100	1.07	d 100	0.28	d 85
Near		15.2	$\pm$ 2.68	29.8	$\pm$ 8.94	81.0	$\pm$ 21.9	112	$\pm$ 21.2	0.27	$\pm$ 0.02	3.76	$\pm$ 1.16	1.68	$\pm$ 0.13	0.51	$\pm$ 0.07
		9.27	91	11.3	64	18.6	77	37.1	100	0.22	89	0.70	95	1.38	96	0.38	91
Far		29.6	$\pm$ 11.7	116	$\pm$ 43.1	36.3	$\pm$ 15.2	146	$\pm$ 49.1	0.13	$\pm$ 0.02	0.23	$\pm$ 0.03	8.23	$\pm$ 1.67	1.00	$\pm$ 0.18
		9.06	84	19.5	46	10.3	69	21.7	100	0.10	66	0.18	80	3.62	95	0.61	87
All		19.9	$\pm$ 4.24	53.2	$\pm$ 13.9	66.7	$\pm$ 15.8	124	$\pm$ 21.9	0.23	$\pm$ 0.02	2.68	$\pm$ 0.81	3.91	$\pm$ 0.62	0.67	$\pm$ 0.08
		9.20	88	13.1	58	15.4	74	30.8	100	0.18	81	0.46	90	1.91	96	0.44	90
Active		4.76	$\pm$ 0.69	4.70	$\pm$ 0.80	18.2	$\pm$ 3.02	31.5	$\pm$ 4.05	0.02	$\pm$ 0.01	0.07	$\pm$ 0.01	0.06	$\pm$ 0.02	0.24	$\pm$ 0.04
		3.97	100	3.50	100	12.6	100	25.7	100	0.01	38	0.05	100	0.04	73	0.13	100
Active data: n = 26, the sum of vapor and particle phases, for 2012																	

Table S5: Arithmetic means $\pm$ their standard errors with their geometric averages, ANOVA results, and detection frequency below of the concentrations for flame retardants (in pg/m^3).

Site ID	Group	DP		TBB & TBPH		TnBP		TCEP		TCPP		TPP	
AU	Far	0.72	$\pm$ 0.11	23.1	$\pm$ 7.49	68.8	$\pm$ 6.78	47.5	$\pm$ 8.62	174	$\pm$ 43.8	484	$\pm$ 185
		0.65	c 92	14.1	ab 100	65.6	ef 83	41.8	cd 67	134	c 92	347	ab 67
CN	Far	1.07	$\pm$ 0.38	7.76	$\pm$ 2.26	56.9	$\pm$ 6.10	35.5	$\pm$ 6.25	163	$\pm$ 33.2	302	$\pm$ 37.7
		0.76	c 82	6.58	b 100	53.6	f 91	31.8	d 64	127	c 100	280	ab 82
IIT	Near	6.68	$\pm$ 1.43	96.8	$\pm$ 40.9	390	$\pm$ 150	510	$\pm$ 241	1,057	$\pm$ 551	347	$\pm$ 80.2
		4.77	ab 100	35.3	a 100	268	a 100	250	ab 80	579	a 100	311	ab 90
JP	Near	2.69	$\pm$ 0.69	7.71	$\pm$ 1.33	253	$\pm$ 50.8	79.3	$\pm$ 21.5	382	$\pm$ 98.7	633	$\pm$ 201
		1.62	bc 94	7.37	b 100	208	ab 100	56.6	cd 100	290	abc 92	399	ab 77
JT	Far	1.08	$\pm$ 0.47	10.3	$\pm$ 5.56	65.1	$\pm$ 4.37	46.2	$\pm$ 4.99	329	$\pm$ 48.0	1,241	$\pm$ 654
		0.66	c 83	7.67	b 100	63.3	ef 100	43.6	cd 75	293	abc 100	552	ab 92
JW	Near	1.87	$\pm$ 0.31	8.28	$\pm$ 1.67	123	$\pm$ 12.9	58.6	$\pm$ 9.36	377	$\pm$ 142	193	$\pm$ 28.2
		1.47	c 100	6.54	b 100	111	cde 100	49.8	cd 89	230	abc 100	173	b 67
LM	Far	1.73	$\pm$ 0.43	28.3	$\pm$ 20.4	124	$\pm$ 15.6	68.0	$\pm$ 14.5	200	$\pm$ 35.8	339	$\pm$ 66.3
		1.31	c 85	10.9	ab 100	113	cde 92	57.6	cd 69	168	bc 100	279	ab 69
NC	Far	1.38	$\pm$ 0.28	17.2	$\pm$ 5.55	111	$\pm$ 15.3	68.2	$\pm$ 6.81	236	$\pm$ 50.7	1,886	$\pm$ 1391
		1.02	c 100	11.0	ab 100	98.0	cdef 100	63.5	cd 100	184	bc 92	549	ab 69
PP	Near	4.07	$\pm$ 2.37	8.94	$\pm$ 1.33	152	$\pm$ 20.2	114	$\pm$ 11.0	309	$\pm$ 51.0	694	$\pm$ 277
		1.54	bc 100	8.40	b 100	139	bcd 92	108	bc 92	258	abc 100	393	ab 92
SL	Near	4.06	$\pm$ 1.67	9.57	$\pm$ 1.24	315	$\pm$ 34.4	150	$\pm$ 74.7	272	$\pm$ 31.5	349	$\pm$ 75.0
		2.28	abc 100	9.89	ab 100	291	a 100	79.8	cd 100	250	abc 100	295	ab 83
SP	Near	2.49	$\pm$ 0.53	12.7	$\pm$ 2.49	184	$\pm$ 14.2	570	$\pm$ 154	697	$\pm$ 214	959	$\pm$ 406
		1.76	bc 100	10.8	ab 100	178	abc 100	336	a 100	456	ab 100	576	a 92
VM	Near	10.7	$\pm$ 4.32	11.8	$\pm$ 3.71	88.0	$\pm$ 9.19	89.5	$\pm$ 20.5	269	$\pm$ 63.5	408	$\pm$ 68.5
		5.87	a 100	7.21	b 100	82.3	def 100	68.5	cd 85	187	bc 100	430	ab 69
WP	Near	2.05	$\pm$ 0.37	17.5	$\pm$ 5.88	125	$\pm$ 18.4	64.7	$\pm$ 7.77	377	$\pm$ 111	250	$\pm$ 48.4
		1.68	bc 100	13.4	ab 100	115	bcde 100	59.5	cd 91	267	abc 100	240	ab 91
Near		4.14	$\pm$ 0.69	20.2	$\pm$ 5.28	195	$\pm$ 19.8	188	$\pm$ 35.9	448	$\pm$ 72.3	486	$\pm$ 78.1
		2.16	99	10.2	100	155	99	92.0	92	285	99	330	81
Far		1.21	$\pm$ 0.16	17.6	$\pm$ 4.99	87.0	$\pm$ 6.26	55.3	$\pm$ 4.41	222	$\pm$ 20.7	875	$\pm$ 329
		0.86	89	9.93	100	77.2	97	48.4	78	174	100	390	78
All		3.21	$\pm$ 0.49	19.3	$\pm$ 3.87	156	$\pm$ 13.5	144	$\pm$ 24.7	364	$\pm$ 47.1	625	$\pm$ 129
		1.61	96	10.1	100	120	98	74.5	87	238	99	351	80
Active		8.20	$\pm$ 1.54	13.4	$\pm$ 2.29	249	$\pm$ 52.1	169	$\pm$ 23.7	533	$\pm$ 81.8	143	$\pm$ 21.2
		4.90	100	8.49	100	169	100	127	100	393	100	111	100
Active data: n = 26, the sum of vapor and particle phases, for 2012													
Active data for OPEs: n = 27, only particle phase, for 2012													

Table S6: Arithmetic means $\pm$ their standard errors with their geometric averages, ANOVA results, and detection frequency below of the concentrations for PAHs and pesticides (in pg/m³).

Site ID	Place	Phen			BaP			tot PAHs			α-HCH			γ-HCH			DDTs			Chlors			Endos		
AU	Far	25,627	±	4010	900	±	464	61,447	±	10884	20.9	±	8.05	4.53	±	0.96	5.26	±	2.06	28.4	±	3.45	70.2	±	19.8
		22,284	a	100	435	a	100	51,887	a	100	11.4	a	33	3.88	bcd	83	6.27	a	100	25.2	b	100	40.8	ab	100
CN	Far	4,707	±	711	94	±	24.2	9,907	±	1374	2.18	±	0.44	1.96	±	0.21	2.42	±	1.31	14.3	±	3.25	22.6	±	5.34
		3,984	e	100	70.5	c	100	8,687	f	100	1.98	a	36	1.84	d	91	4.84	a	100	8.18	c	100	16.3	b	100
IIT	Near	21,034	±	5367	494	±	128	44,107	±	9411	6.73	±	0.51	9.89	±	2.87	23.2	±	13.0	87.8	±	24.5	144	±	43.9
		15,592	ab	100	377	ab	100	35,502	abc	100	6.60	a	54	7.52	b	100	9.87	a	100	66.2	a	100	85.1	a	100
JP	Near	7,673	±	1197	278	±	75.3	16,046	±	2250	6.04	±	1.98	5.43	±	0.72	7.87	±	1.92	41.0	±	5.52	47.6	±	14.9
		6,271	cde	100	166	abc	100	13,593	ef	100	4.82	a	35	4.76	bc	100	4.94	a	100	34.4	ab	100	29.4	ab	100
JT	Far	16,496	±	5787	247	±	40.8	32,110	±	10690	3.51	±	1.13	9.72	±	6.83	6.44	±	2.08	53.2	±	20.6	32.4	±	11.6
		10,217	abcd	100	208	abc	100	21,905	bcde	100	2.95	a	25	3.32	bcd	83	4.78	a	100	32.8	ab	100	16.4	b	100
JW	Near	14,029	±	1811	921	±	375	36,093	±	5957	3.88	±	0.74	6.00	±	1.86	4.15	±	0.80	31.7	±	3.30	42.7	±	8.97
		12,098	abc	100	375	a	100	29,706	abcd	100	3.17	a	39	4.04	bcd	94	2.97	a	100	31.0	ab	100	29.9	ab	100
LM	Far	13,015	±	2486	146	±	31.1	24,296	±	4068	4.97	±	1.06	3.83	±	0.43	3.53	±	0.98	30.7	±	3.53	41.3	±	9.75
		10,329	abcd	100	117	bc	100	20,480	bcde	100	4.38	a	31	3.44	bcd	100	2.71	a	100	28.1	ab	100	32.8	ab	100
NC	Far	10,409	±	1658	111	±	16.2	19,345	±	2593	4.61	±	1.38	3.31	±	0.40	4.13	±	1.86	22.4	±	2.63	38.0	±	8.51
		8,882	bcde	100	96.2	c	92	17,345	cdef	100	3.70	a	31	2.96	cd	100	8.62	a	100	20.6	b	100	27.8	ab	100
PP	Near	6,582	±	807	223	±	41.8	15,003	±	1691	4.71	±	1.64	3.46	±	0.33	6.93	±	1.96	65.3	±	9.97	33.6	±	6.26
		5,953	cde	100	171	abc	94	13,833	ef	100	3.57	a	38	3.20	cd	94	5.88	a	100	60.1	a	100	27.2	ab	100
SL	Near	18,200	±	2134	444	±	86.3	41,643	±	3584	5.89	±	2.15	6.88	±	2.55	8.29	±	2.27	41.5	±	5.41	33.1	±	11.4
		16,831	ab	100	343	ab	100	39,805	ab	100	4.06	a	42	4.65	bcd	100	6.17	a	100	36.8	ab	100	20.9	b	100
SP	Near	8,902	±	1091	264	±	82.1	17,575	±	2463	3.75	±	0.90	23.8	±	3.89	5.56	±	1.37	43.9	±	6.68	25.9	±	5.20
		7,880	bcde	100	149	abc	100	15,459	def	100	3.13	a	47	20.1	a	100	4.94	a	100	38.7	ab	100	18.2	b	100
VM	Near	10,616	±	2265	277	±	69.9	21,843	±	3758	11.3	±	4.98	5.58	±	2.76	8.10	±	1.93	41.8	±	7.53	36.9	±	9.16
		8,423	bcde	100	195	abc	100	18,520	cdef	100	8.50	a	23	3.22	bcd	85	4.92	a	100	39.6	ab	100	33.0	ab	100
WP	Near	6,135	±	715	272	±	75.3	14,604	±	1586	5.33	±	0.99	3.77	±	0.48	7.75	±	1.77	31.1	±	4.97	25.4	±	8.58
		5,602	de	100	191	abc	100	13,377	ef	100	4.74	a	46	3.45	bcd	85	6.52	a	100	25.7	b	100	17.1	b	100
Near		11,380	±	910	409	±	67.4	25,411	±	1916	5.54	±	0.62	8.26	±	1.00	8.63	±	1.63	47.5	±	3.86	47.7	±	6.72
		8,863		100	228		99	20,049		100	4.35		40	5.24		95	5.30		100	39.5		100	28.2		100
Far		14,127	±	1761	300	±	101	29,492	±	3877	7.44	±	2.38	4.55	±	1.29	4.37	±	0.79	30.0	±	4.55	41.2	±	5.74
		9,778		100	149		98	20,604		100	4.11		31	3.02		92	4.61		100	21.2		100	25.3		100
All		12,321	±	855	372	±	56.4	26,809	±	1836	6.08	±	0.82	7.02	±	0.81	7.17	±	1.12	41.5	±	3.04	45.5	±	4.84
		9,167		100	197		99	20,237		100	4.28		37	4.35		94	5.11		100	31.8		100	27.1		100
Active		23,187	±	3299	230	±	23.2	45,304	±	5399	5.77	±	0.40	4.51	±	0.38	29.3	±	3.11	53.6	±	5.96	21.5	±	2.94
		13,381		100	169		100	30,606		100	4.92		100	3.58		96	20.9		100	39.5		100	13.9		100
Active data: n = 56, the sum of vapor and particle phases, for 2012 and 2013																									

Table S8: Pearson correlations (*r*) and the associated *P* values for all the compounds.

	BDE-47	BDE-99	BDE209	PBDEs	pTBX	PBBZ	PBEB	HBB	DP	TBB	TBPH	TBB&TBPH	TnBP	TCEP	TCPP	TPP	Phen	BaP	PAHs	A-HCH	G-HCH	DDTs	Chlordanes
BDE-99	0.490 0.089																						
BDE209	0.291 0.335	-0.100 0.745																					
PBDEs	0.620 0.024	-0.135 0.659	0.766 0.002																				
pTBX	0.162 0.598	-0.431 0.141	0.287 0.342	0.412 0.161																			
PBBZ	0.504 0.079	0.959 0.000	-0.169 0.778	-0.414 0.581	0.160																		
PBEB	0.077 0.802	-0.192 0.529	-0.136 0.657	-0.061 0.842	0.693 0.009	-0.112 0.716																	
HBB	0.643 0.018	0.936 0.000	-0.022 0.942	0.003 0.992	-0.403 0.172	0.971 0.000	-0.152 0.620																
DP	0.345 0.248	-0.265 0.381	0.246 0.417	0.502 0.080	0.487 0.091	-0.290 0.336	-0.025 0.935	-0.221 0.469															
TBB	0.537 0.059	-0.034 0.913	0.195 0.524	0.604 0.029	0.143 0.642	-0.021 0.945	-0.054 0.862	0.120 0.696	0.318 0.290														
TBPH	0.644 0.017	-0.204 0.504	0.479 0.098	0.893 0.000	0.328 0.273	-0.232 0.446	-0.074 0.811	-0.042 0.892	0.487 0.091	0.811 0.001													
TBB&TBPH	0.623 0.023	-0.193 0.528	0.381 0.198	0.840 0.000	0.332 0.268	-0.203 0.506	-0.008 0.979	-0.013 0.967	0.436 0.136	0.890 0.000	0.976 0.000												
TnBP	0.153 0.618	-0.377 0.205	0.543 0.055	0.709 0.007	0.564 0.045	-0.394 0.183	0.183 0.550	-0.281 0.352	0.362 0.224	0.228 0.454	0.494 0.086	0.487 0.092											
TCEP	0.412 0.161	-0.295 0.327	0.142 0.644	0.460 0.114	0.833 0.000	-0.238 0.433	0.804 0.001	-0.153 0.619	0.338 0.259	0.357 0.231	0.466 0.108	0.525 0.065	0.517 0.071										
TCPP	0.564 0.045	-0.326 0.276	0.462 0.112	0.757 0.003	0.709 0.007	-0.279 0.356	0.475 0.101	-0.128 0.677	0.405 0.170	0.395 0.181	0.727 0.005	0.699 0.008	0.659 0.014	0.843 0.000									
TPP	-0.072 0.815	-0.252 0.406	-0.060 0.847	-0.149 0.628	0.142 0.643	-0.097 0.753	0.473 0.102	-0.130 0.672	-0.037 0.905	-0.206 0.499	-0.160 0.601	-0.128 0.677	-0.110 0.721	0.346 0.246	0.203 0.506								
Phen	-0.053 0.864	-0.373 0.210	-0.056 0.856	0.195 0.522	-0.202 0.509	-0.333 0.267	-0.141 0.646	-0.218 0.475	0.072 0.815	0.537 0.058	0.353 0.236	0.424 0.149	0.248 0.413	0.032 0.917	0.065 0.833	-0.170 0.578							
BaP	0.016 0.958	-0.400 0.176	0.075 0.807	0.297 0.324	-0.046 0.880	-0.377 0.204	-0.175 0.567	-0.245 0.420	0.207 0.498	0.476 0.100	0.424 0.149	0.435 0.137	0.327 0.275	0.061 0.843	0.228 0.453	-0.389 0.189	0.858 0.000						
PAHs	-0.062 0.840	-0.358 0.230	-0.051 0.869	0.190 0.535	-0.208 0.494	-0.321 0.284	-0.180 0.556	-0.206 0.499	0.079 0.798	0.524 0.066	0.341 0.254	0.406 0.168	0.258 0.394	-0.002 0.994	0.053 0.863	-0.246 0.417	0.993 0.000	0.904 0.000					
A-HCH	-0.138 0.653	-0.451 0.122	0.051 0.867	0.104 0.736	-0.003 0.992	-0.372 0.210	-0.203 0.506	-0.361 0.226	0.396 0.180	0.558 0.047	0.294 0.330	0.339 0.256	-0.063 0.838	-0.063 0.839	-0.091 0.768	-0.068 0.826	0.634 0.020	0.556 0.049	0.629 0.021				
G-HCH	0.178 0.561	-0.302 0.316	0.033 0.915	0.173 0.572	0.774 0.002	-0.223 0.464	0.965 0.000	-0.214 0.482	0.103 0.739	0.107 0.729	0.151 0.623	0.205 0.501	0.373 0.210	0.901 0.000	0.654 0.015	0.420 0.153	0.006 0.985	-0.002 0.995	-0.032 0.917	-0.108 0.726			
DDTs	0.307 0.308	-0.193 0.528	0.254 0.403	0.572 0.041	0.130 0.673	-0.172 0.574	-0.099 0.748	-0.042 0.892	0.292 0.333	0.675 0.011	0.669 0.012	0.720 0.006	0.376 0.205	0.321 0.284	0.450 0.123	0.206 0.500	0.244 0.422	0.207 0.498	0.233 0.444	0.256 0.399	0.035 0.910		
Chlordanes	0.213 0.485	-0.554 0.049	0.316 0.292	0.573 0.041	0.573 0.041	-0.505 0.078	0.105 0.733	-0.356 0.232	0.568 0.043	0.266 0.379	0.558 0.048	0.554 0.050	0.594 0.032	0.564 0.045	0.714 0.006	0.082 0.791	0.169 0.580	0.350 0.241	0.179 0.559	0.160 0.601	0.276 0.361	0.360 0.227	
Endosulfans	0.502 0.080	-0.234 0.441	0.478 0.098	0.809 0.001	0.239 0.432	-0.262 0.386	-0.185 0.545	-0.078 0.800	0.556 0.048	0.798 0.001	0.877 0.000	0.884 0.000	0.406 0.169	0.361 0.225	0.536 0.059	-0.192 0.530	0.486 0.092	0.515 0.072	0.473 0.103	0.492 0.087	0.037 0.905	0.552 0.050	0.610 0.027