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Supplement Information to

PAH and PCB in soils of Switzerland - Status and critical review

Table S1: Site description and soil analytical data of the Swiss soil monitoring network

Site number	1	2	3	4	5	6	7	8	9
Site description									
Altitude (m a.s.l.)	537	668	488	478	475	1'915	581	695	324
Land use	intensive grassland	coniferous forest	arable land	orchard	viticulture	extensive grassland	coniferous forest	deciduous forest	arable land
Mean annual temperature (°C)	7.1	7.9	8.2	8.5	9.4	6	7.3	7.6	9
Mean annual precipitation (mm)	1'173	1'128	1'023	575	1'058	1'251	967	947	790
population density[a] (pers. km^{-1})	3'555	6'499	1'891	1'909	3'443	1'394	1'404	1'408	6'286
Main emission source	residential area	residential area	residential area	road traffic	residential area	residential area	residential area	residential area	city, chem. industry
Distance to main emission source (km)	0.3	1.5	0.3	0.5	0.4	>3	1.5	2	0.75
Type of area	semi-rural	residential	semi-rural	semi-rural	semi-rural	remote	rural	rural	residential
Position in relation to inversion layer	below	below	below	below	below	above	below	within	below
Humus type	mull	mull (moder)	mull	mull	mull	mull (moder)	mull	mull	mull
Soil analytical data (0-20 cm)									
Total organic carbon (%dw)	3.8	3.4	1.2	1.7	1.6	5.8	3.2	4.8	1.1
pH (0.01 M $CaCl_2$)	6.7	4.7	6.5	7.2	7.4	3.6	5.1	6.7	4.9
PAH ($\mu g/kg_{dw}$)									
PAH_{16}	336	438	204	110	582	62	163	357	462
NAP naphthalene	9.1	8.6	6.7	11	18	13	7.4	35	7.6
ACY acenaphthylene	0.83	2.7	0.92	0.46	3.6	0.50	1.0	1.3	2.6
ACE acenaphthene	3.8	2.2	1.5	6.2	4.3	3.1	2.5	2.6	2.7
FLU fluoranthene	2.6	2.3	1.3	3.2	5.1	3.2	1.8	2.6	2.5
PHE phenanthrene	31	36	67	19	108	27	16	97	59
ANT antharacene	2.8	3.5	1.2	1.1	3.9	<0.2	0.99	1.3	2.2
FLT fluoranthene	57	71	27	13	107	4.6	27	48	76
PYR pyrene	44	54	17	9.9	82	2.6	20	32	57
BaA benzo*[a]* anthracene	27	29	9.2	6.3	44	0.85	8.7	14	28
CHR chrysene	32	42	14	7.9	48	1.5	15	23	39
BbF benzo[b]fluoranthene	32	45	14	7.5	32	1.6	17	25	44
BkF benzo[k]fluoranthene	17	20	7.3	3.9	24	0.79	7.8	11	25
BaP benzo[a]pyrene	29	56	13	7.4	41	1.6	14	23	45
IPY idenol*[1,2,3-cd]* pyrene	22	29	11	5.5	26	1.2	11	18	33
DBA dibenz*[a,h]* anthracene	5.7	7.7	2.5	1.3	2.2	<0.04	2.3	4.0	6.9
BPE benzo*[g,h,i]* perylene	22	29	11	6.0	31	1.4	11	19	32
PAH markers[b]									
cPHE	3.1	3.3	0.86	0.71	14	0.35	2.4	1.7	
RET	1.1	2.0	0.89	0.76	17	0.81	3.3	3.6	
cPYR	0.95	1.3	0.68	0.29	16	0.15	1.4	1.3	
PER	5.2	62	1.3	2.1	25	0.41	1.0	1.0	
COR	13	20	4.9	3.6	19	1.5	15	14	
(MPHE/ANT)/PHE [-]	0.33	0.34	0.13	0.16	0.39	0.10	0.31	0.14	0.25
(MFLT/PYR)/PYR [-]	0.41	0.40	0.37	0.32	0.50	0.31	0.29	0.28	0.38
1,7-/(1,7-& 2,6 DmPHE) [-]	0.56	0.58	0.58	0.54	0.63	0.54	0.58	0.61	0.57
PCB ($\mu g/kg_{dw}$)									
PCB_7	0.98	5.8	1.1	0.63	2.1	0.61	2.1	2.8	2.2
PCB 28	<0.04	<0.04	0.13	<0.04	0.12	<0.04	<0.04	0.10	0.10
PCB 52	<0.04	0.19	0.10	<0.04	0.39	0.14	<0.04	0.41	0.24
PCB 101	<0.4	0.73	<0.4	<0.4	<0.4	<0.4	<0.4	0.42	<0.4
PCB 118	<0.2	0.25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCB 138	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	2.0	<0.5	<0.5	<0.5	<0.5	0.79	0.73	0.54
PCB 180	<0.3	1.3	<0.3	<0.3	<0.3	<0.3	0.53	0.50	0.30

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	10	11	12	13	14	15	16	17	18	19
Site description										
Altitude (m a.s.l.)	935	515	380	455	440	433	1'220	945	525	685
Land use	extensive grassland	arable land	conserva-tion sites	arable land	arable land	arable land	extensive grassland	arable land	coniferous forest	deciduous forest
Mean annual temperature (°C)	8.5	8.3	8.4	8.5	7.9	9.1	4.1	6.9	8.1	7.6
Mean annual precipitation (mm)	1'523	939	1'206	1'266	1'128	994	1'044	1'176	1'163	1'007
population density[a)] (pers. km^{-1})	2'165	2'037	1'724	1'490	3'985	1'502	604	1'411	3'131	4'608
Main emission source	residential area	residential area	residential area	residential area	residential and	residential area	residential area	residential area	residential area	residential area
Distance to main emission source (km)	1	1.5	1.2	0.8	0.5	1.5	2	3	2	2.5
Type of area	rural	rural	rural	semi-rural	residential an	semi-rural	rural	rural	semi-rural	semi-rural
Position in relation to inversion layer	above	below	below	below	below	below	below	below	below	within
Humus type	hydromull	mull	hydromull	mull	mull	wet mull	mull	mull	mull (moder)	mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	4.2	1.8	4.9	1.4	1.5	15	3.8	1.7	7.0	3.1
pH (0.01 M $CaCl_2$)	4.8	6.6	5.6	5.1	7.3	6.0	5.4	5.1	3.2	4.4
PAH ($\mu g/kg_{dw}$)										
PAH_{16}	150	250	230		247	347	67	121	505	
NAP naphthalene	6.9	9.0	21		5.8	45	5.6	8.7	20	7.4
ACY acenaphthylene	0.53	0.81	0.72		0.54	1.1	<0.4	<0.4	1.5	1.7
ACE acenaphthene	1.6	2.0	4.6		3.3	12	1.0	2.3	3.7	1.5
FLU fluoranthene	1.3	1.5	4.3		2.1	7.2	1.0	2.1	4.5	2.1
PHE phenanthrene	18	92	53		83	101	34	44	67	21
ANT antharacene	0.65	0.68	1.00		0.43	1.3	<0.2	0.72	2.0	1.6
FLT fluoranthene	22	28	29		31	38	6.6	14	79	40
PYR pyrene	17	19	21		21	25	3.6	9.2	59	29
BaA benzo*[a]* anthracene	9.2	11	10		11	13	1.6	4.2	24	13
CHR chrysene	14	17	18		15	18	2.5	7.0	44	22
BbF benzo[b]fluoranthene	14	17	16		18	20	2.5	6.6	51	24
BkF benzo[k]fluoranthene	6.8	8.5	7.7		11	10	1.7	4.0	24	14
BaP benzo[a]pyrene	13	15	14		16	20	2.3	5.8	52	
IPY idenol*[1,2,3-cd]* pyrene	10	12	12		13	15	1.4	5.3	35	18
DBA dibenz*[a,h]* anthracene	2.6	3.6	2.8		2.4	3.9	0.58	0.72	7.0	3.1
BPE benzo*[g,h,i]* perylene	12	13	13		13	15	2.5	5.6	32	16
PAH markers[b)]										
cPHE	1.4	1.1	1.6	5.5			0.73	1.1	4.5	3.4
RET		0.75	1.5	1.8			1.0	1.3	2.8	3.9
cPYR	1.7	1.3	1.5	8.3			0.80	1.3	2.5	2.1
PER	3.5	2.4	4.6	35			1.6	2.2	5.1	
COR	12	6.5	14	41			1.9	4.7	25	29
(MPHE/ANT)/PHE [-]	0.24	0.10	0.27	0.31	0.11	0.13	0.09	0.11	0.25	0.32
(MFLT/PYR)/PYR [-]	0.36	0.37	0.33	0.38	0.39	0.44	0.33	0.36	0.39	0.35
1,7-/(1,7-& 2,6 DmPHE) [-]	0.55	0.56	0.64	0.65	0.58	0.59	0.60	0.60	0.60	0.61
PCB ($\mu g/kg_{dw}$)										
PCB_7	1.3	1.8	1.6	6.3	2.3	1.9	0.83	1.6	6.1	3.2
PCB 28	0.07	0.18	0.05	0.11	0.19	0.09	<0.04	0.06	0.15	<0.04
PCB 52	<0.04	0.48	0.15	0.53	0.46	0.50	0.17	0.19	0.24	<0.04
PCB 101	<0.4	<0.4	<0.4	0.92	<0.4	0.48	<0.4	<0.4	0.76	<0.4
PCB 118	<0.2	<0.2	<0.2	0.53	<0.2	<0.2	<0.2	<0.2	0.54	<0.2
PCB 138	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	1.5	0.76
PCB 153	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	<0.5	<0.5	1.7	1.2
PCB 180	<0.3	<0.3	<0.3	1.3	<0.3	<0.3	<0.3	<0.3	1.2	0.78

[a)] inhabitants in the community of the sampling site

[b)] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	20	21	22	23	24	25	26	27	28	29
Site description										
Altitude (m a.s.l.)	460	565	675	343	387	545	428	505	465	450
Land use	orchard	arable land	coniferous forest	arable land	deciduous forest	arable land	arable land	deciduous forest	arable land	arable land
Mean annual temperature (°C)	8.3	7.7	7.6	9	8.3	8.4	9.2	9.2	8.5	8.3
Mean annual precipitation (mm)	1'179	1'000	1'144	1'013	1'007	816	930	872	992	1'159
population density[a] (pers. km^{-1})	1'756	4'142	1'717	3'069	3'165	1'297	3'089	1'391	1'808	2'294
Main emission source	residential area	residential area	residential area	industrial area	cement industry	residential area	residential area	residential area	residential area	road traffic
Distance to main emission source (km)	1	0.2	1.5	2	1	1.5	0.75	1.7	2.5	0.05
Type of area	semi-rural	residential	rural	semi-rural	semi-rural	rural	semi-rural	semi-rural	rural	semi-rural
Position in relation to inversion layer	below	below	within	below	below	below	below	below	below	below
Humus type	mull	mull	mull (moder)	mull	mull	mull	mull	mull	mull	mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	2.0	1.5	4.0	1.3	2.8	2.3	1.1	2.4	1.4	2.3
pH (0.01 M $CaCl_2$)	5.4	5.1	3.4	6.2	4.8	7.2	5.2	4.2	5.3	5.3
PAH (µg/kg_{dw})										
PAH_{16}	149	581	286	241	177	144	432		134	158
NAP naphthalene	12	9.6	6.5	8.1	8.8	15	7.2	6.4	6.9	15
ACY acenaphthylene	0.76	2.4	1.2	0.80	0.90	<0.4	1.4	1.1	0.57	0.86
ACE acenaphthene	2.2	2.6	1.9	1.9	2.4	1.9	2.9	0.86	2.0	3.2
FLU fluoranthene	2.4	3.9	1.9	1.9	1.5	1.8	2.6	1.8	2.1	2.7
PHE phenanthrene	46	92	21	53	18	62	74	33	58	45
ANT antharacene	0.40	6.1	1.7	0.90	1.1	<0.2	4.1	0.91	<0.2	0.46
FLT fluoranthene	19	101	42	33	27	15	70	20	13	19
PYR pyrene	13	77	33	23	20	10	53	14	8.1	14
BaA benzo*[a]* anthracene	6.6	43	16	13	9.6	2.9	36	6.9	4.4	5.1
CHR chrysene	9.5	47	27	21	18	6.7	40	9.9	6.7	10
BbF benzo[b]fluoranthene	9.9	45	30	21	18	6.7	34	8.5	7.6	10
BkF benzo[k]fluoranthene	6.3	24	14	11	8.6	3.6	19	4.8	3.8	5.8
BaP benzo[a]pyrene	8.1	50	47	19	15	5.5	33		7.1	9.1
IPY idenol*[1,2,3-cd]* pyrene	6.9	34	20	14	13	5.2	22	7.1	5.8	7.6
DBA dibenz*[a,h]* anthracene	0.97	8.6	3.7	4.5	2.7	1.1	7.8	1.2	1.2	2.6
BPE benzo*[g,h,i]* perylene	6.5	35	19	15	13	6.4	24	7.2	6.2	8.0
PAH markers[b]										
cPHE	1.1	6.6		1.9		1.4	4.9	1.9	1.2	2.9
RET	1.3	1.4		1.6		1.6	1.4	1.6	1.4	4.3
cPYR	1.2	3.0		2.1		1.9	1.9	1.6	1.7	4.0
PER	1.8	7.4		2.3		2.3	3.8		1.7	25
COR	5.5	14		8.0		9.7	8.7	6.0	3.7	12
(MPHE/ANT)/PHE [-]	0.14	0.27	0.35	0.14	0.32	0.09	0.26	0.16	0.10	0.13
(MFLT/PYR)/PYR [-]	0.36	0.41	0.40	0.33	0.44	0.28	0.41	0.38	0.32	0.41
1,7-/(1,7-& 2,6 DmPHE) [-]	0.60	0.57	0.63	0.58	0.54	0.58	0.60	0.57	0.57	0.59
PCB (µg/kg_{dw})										
PCB_7	1.5	3.5	3.3	2.4	3.3	1.5	1.2	1.9	1.4	1.8
PCB 28	0.07	0.10	<0.04	0.15	<0.04	0.13	0.12	0.08	0.14	0.14
PCB 52	0.19	0.34	0.08	0.32	0.07	0.29	0.31	0.19	0.33	0.31
PCB 101	<0.4	0.54	0.44	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PCB 118	<0.2	<0.2	0.24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCB 138	<0.5	0.63	0.87	<0.5	0.89	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	1.1	1.0	0.68	1.1	<0.5	<0.5	0.58	<0.5	<0.5
PCB 180	<0.3	0.65	0.61	0.38	0.62	<0.3	<0.3	0.32	<0.3	<0.3

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	30	31	32	33	34	35	36	37	38	39
Site description										
Altitude (m a.s.l.)	635	775	1'215	431	1'880	1'093	500	735	478	534
Land use	intensive grassland	arable land	extensive grassland	intensive grassland	extensive grassland	intensive grassland	arable land	intensive grassland	arable land	arable land
Mean annual temperature (°C)	8.3	6.8	4.8	8.8	5.7	5.3	8.3	7.7	8.5	8.3
Mean annual precipitation (mm)	1'159	1'146	1'375	1'699	1'587	1'400	1'154	963	1'266	952
population density[a)] (pers. km^{-1})	3'910	986	730	1'689	974	816	3'906	2'153	2'032	916
Main emission source	residential area	tar recycling plant	residential area	industrial area	residential area	residential area	residential area	residential area	road traffic	road traffic
Distance to main emission source (km)	0.8	1.5	5	0.1	2.7	0.25	0.5	2.5	0.2	0.5
Type of area	semi-rural	semi-rural	remote	semi-rural	remote	rural	semi-rural	semi-rural	semi-rural	semi-rural
Position in relation to inversion layer	within	within	above	below	above	above	below	within	below	below
Humus type	mull	mull	mull	hydromull	mull	mull	mull	mull	mull	mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	2.7	2.2	8.4	4.6	5.0	3.3	2.0	2.8	1.7	3.0
pH (0.01 M $CaCl_2$)	5.0	6.5	5.2	6.2	4.3	5.7	6.4	5.3	5.9	7.3
PAH (µg/kg_{dw})										
PAH_{16}	99	2'690	157	467	79	222	140	96	246	149
NAP naphthalene	12	19	12	32	14	9.7	18	13	7.6	13
ACY acenaphthylene	<0.4	26	0.58	0.90	<0.4	0.88	0.40	<0.4	1.2	0.41
ACE acenaphthene	1.7	3.0	5.1	10	2.2	1.6	2.1	1.7	1.9	4.4
FLU fluoranthene	1.2	12	2.9	6.7	3.0	1.7	1.7	1.4	1.6	2.4
PHE phenanthrene	19	226	26	89	36	29	60	26	56	34
ANT antharacene	0.34	19	0.51	3.0	<0.2	0.91	<0.2	0.48	0.91	0.51
FLT fluoranthene	9.9	431	22	78	5.9	31	14	12	27	19
PYR pyrene	7.4	325	16	57	3.3	23	8.2	8.3	21	14
BaA benzo*[a]* anthracene	4.5	234	6.0	28	1.0	16	4.3	4.0	11	7.0
CHR chrysene	7.3	259	12	36	2.0	20	6.3	5.4	16	9.4
BbF benzo[b]fluoranthene	8.6	252	13	29	2.0	19	5.9	5.0	20	11
BkF benzo[k]fluoranthene	4.0	164	7.1	16	1.1	11	2.9	2.7	12	5.4
BaP benzo[a]pyrene	8.3	285	11	29	3.0	20	4.9	4.7	22	9.4
IPY idenol*[1,2,3-cd]* pyrene	5.9	206	10	24	2.4	18	5.7	5.3	21	7.9
DBA dibenz*[a,h]* anthracene	1.3	41	1.6	4.6	<0.04	3.1	0.93	0.64	4.2	1.9
BPE benzo*[g,h,i]* perylene	6.5	189	10	23	2.6	17	5.6	5.3	23	9.3
PAH markers[b)]										
cPHE		29		5.1	1.4	2.3	1.6	1.5		1.1
RET		5.1		2.5	2.1	2.7	2.6	2.0		1.1
cPYR		19		2.7	2.2	2.8	2.4	2.2		1.3
PER		55		7.2	4.5	4.4	3.2	3.0		3.0
COR		77		10	2.6	8.2	4.8	3.7		6.3
(MPHE/ANT)/PHE [-]	0.16	0.55	0.19	0.17	0.09	0.22	0.12	0.15	0.13	0.15
(MFLT/PYR)/PYR [-]	0.47	0.64	0.34	0.33	0.31	0.43	0.37	0.32	0.42	0.39
1,7-/(1,7-& 2,6 DmPHE) [-]	0.58	0.57	0.60	0.56	0.58	0.58	0.60	0.58	0.59	0.57
PCB (µg/kg_{dw})										
PCB_7	1.2	1.3	1.1	2.3	0.89	0.76	1.4	1.5	1.3	1.5
PCB 28	<0.04	0.12	<0.04	0.12	0.07	0.06	0.15	0.06	0.10	0.07
PCB 52	0.09	0.30	0.10	0.38	0.21	0.13	0.33	0.15	0.28	0.16
PCB 101	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PCB 118	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCB 138	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	<0.5	<0.5	0.63	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 180	<0.3	<0.3	<0.3	0.33	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

[a)] inhabitants in the community of the sampling site

[b)] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	40	41	42	43	44	45	46	47	48	49
Site description										
Altitude (m a.s.l.)	851	464	580	622	417	1'180	439	1'655	409	1'100
Land use	coniferous forest	extensive grassland	deciduous forest	deciduous forest	arable land	coniferous forest	arable land	coniferous forest	arable land	extensive grassland
Mean annual temperature (°C)	7.4	8.5	8.2	8.3	8.2	6.3	8.2	2.6	8	5.4
Mean annual precipitation (mm)	1'106	1'266	1'023	1'354	1'093	1'652	1'023	1'007	1'334	1'562
population density[a] (pers. km^{-1})	1'855	1'636	1'984	2'517	1'581	1'400	1'154	1'932	1'751	1'163
Main emission source	residential area	residential area	residential area	road traffic	railway	residential area	residential area	residential area	road traffic	road traffic
Distance to main emission source (km)	1	1.5	2	0.5	0.2	3	2.7	1.5	1.5	0.2
Type of area	rural	semi-rural	rural	rural	semi-rural	remote	semi-rural	semi-rural	semi-rural	rural
Position in relation to inversion layer	within	below	below	below	below	within	below	above	below	above
Humus type	moder	mull	mull (moder)	mull	mull	hydromull	mull	raw humus		mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	4.9	2.7	2.9	3.0	1.4		2.3	12	14	4.7
pH (0.01 M $CaCl_2$)	3.5	4.7	3.9	4.3	5.2	5.2	7.6	3.1	5.6	4.7
PAH ($\mu g/kg_{dw}$)										
PAH_{16}	364	158	104	138	150	305	122	116	226	119
NAP naphthalene	13	9.2	7.7	7.1	9.5	26	16	15	36	17
ACY acenaphthylene	1.2	1.0	0.45	0.75	0.54	1.5	<0.4	0.45	0.98	0.47
ACE acenaphthene	2.7	2.9	2.3	1.5	2.4	7.3	2.5	3.0	13	2.9
FLU fluoranthene	3.0	1.8	1.4	1.0	1.7	6.9	1.9	2.4	5.9	3.1
PHE phenanthrene	33	16	15	17	29	96	50	33	61	36
ANT antharacene	1.6	0.72	0.41	0.63	0.66	0.80	0.20	0.50	1.2	0.54
FLT fluoranthene	58	22	14	22	19	28	13	13	26	15
PYR pyrene	45	17	11	17	15	20	8.4	9.5	16	11
BaA benzo*[a]* anthracene	22	11	5.1	6.2	7.9	7.4	3.0	4.1	7.4	5.0
CHR chrysene	34	14	8.5	12	12	19	4.9	6.5	11	5.9
BbF benzo[b]fluoranthene	33	12	8.7	12	12	24	5.0	6.7	11	4.8
BkF benzo[k]fluoranthene	17	7.3	4.2	6.6	6.3	7.7	2.6	3.3	5.5	2.6
BaP benzo[a]pyrene	43	17	8.4	15	11	18	4.3	5.2	8.9	5.7
IPY idenol*[1,2,3-cd]* pyrene	26	12	7.6	8.5	10	16	4.0	5.3	9.4	3.7
DBA dibenz*[a,h]* anthracene	5.0	2.4	1.2	1.7	1.5	2.8	0.46	0.70	1.5	0.45
BPE benzo*[g,h,i]* perylene	25	12	7.2	9.4	11	22	4.5	6.7	9.6	4.6
PAH markers[b]										
cPHE	7.4	1.9	1.6		1.7	2.8	1.6	1.8	2.1	3.6
RET	7.5	2.3	1.6		1.7	68	2.1	3.8	2.3	22
cPYR	5.2	2.3	1.8		2.0	3.2	2.1	2.2	2.2	4.2
PER	12	3.6	3.2		3.3	78	3.2	3.6	5.8	6.4
COR	23	4.9	5.1		7.0	32	3.7	5.1	6.8	7.8
(MPHE/ANT)/PHE [-]	0.31	0.30	0.18	0.24	0.13	0.32	0.10	0.12	0.13	0.11
(MFLT/PYR)/PYR [-]	0.36	0.45	0.32	0.40	0.35	0.69	0.28	0.30	0.30	0.22
1,7-/(1,7-& 2,6 DmPHE) [-]	0.57	0.58	0.56	0.57	0.57	0.65	0.47	0.64	0.61	0.58
PCB ($\mu g/kg_{dw}$)										
PCB_7	2.5	0.86	1.9	2.0	2.2	4.4	1.3	1.7	2.3	1.5
PCB 28	0.04	0.04	<0.04	<0.04	0.05	0.13	0.08	0.09	0.10	0.06
PCB 52	0.14	0.10	0.09	0.08	0.15	0.38	0.19	0.20	0.34	0.16
PCB 101	<0.4	<0.4	<0.4	<0.4	<0.4	1.5	<0.4	<0.4	<0.4	<0.4
PCB 118	0.22	<0.2	0.23	<0.2	0.29	0.29	<0.2	0.23	0.25	<0.2
PCB 138	<0.5	<0.5	<0.5	0.54	<0.5	0.70	<0.5	<0.5	<0.5	<0.5
PCB 153	0.78	<0.5	0.65	0.62	0.65	0.85	<0.5	<0.5	0.57	0.50
PCB 180	0.53	<0.3	0.35	0.34	0.38	0.52	<0.3	<0.3	0.33	<0.3

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	50	51	52	53	54	55	56	57	58	59
Site description										
Altitude (m a.s.l.)	2'120	464	1'338	626	557	440	998	1'030	910	425
Land use	extensive grassland	horticulture	extensive grassland	arable land	arable land	viticulture	arable land	extensive grassland	coniferous forest	horticulture
Mean annual temperature (°C)	-0.2	8.8	5.4	7.6	7.7	9.4	4	6	6.7	7.9
Mean annual precipitation (mm)	2'327	1'047	1'696	947	1'000	944	1'350	1'330	1'397	1'006
population density[a] (pers. km^{-1})	344	1'866	1'204	1'833	1'844	4'879	1'146	814	2'188	3'425
Main emission source	residential area	road traffic	army training	residential area	road traffic	petrol combustion	residential area	timber industry	residential area	residential area
Distance to main emission source (km)	>3	0.4	0	3	0.1	0.3	3	0.5	2	0.8
Type of area	remote	semi-rural	rural	rural	rural	semi-rural	rural	rural	rural	semi-rural
Position in relation to inversion layer	above	below	above	within	below	below	above	below	above	below
Humus type	mull	mull	mull	mull	mull	mull	mull	mull	humified mod	hydromull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	4.3	1.4	4.2	2.8	1.1	1.1	3.1	4.0	6.1	2.9
pH (0.01 M $CaCl_2$)	3.9	7.2	5.3	7.2	6.1	7.2	4.3	6.0	3.5	6.9
PAH ($\mu g/kg_{dw}$)										
PAH_{16}	54	49	157	423	69	1'034	89	72	140	237
NAP naphthalene	9.9	8.9	9.8	21	8.5	13	16	14	11	15
ACY acenaphthylene	<0.4	<0.4	<0.4	0.66	<0.4	4.5	0.43	<0.4	0.42	0.47
ACE acenaphthene	3.1	2.4	1.9	2.1	<0.8	2.0	4.1	1.8	3.8	3.3
FLU fluoranthene	2.1	1.3	1.5	1.9	0.65	5.0	2.6	1.5	2.7	2.2
PHE phenanthrene	29	14	25	55	14	133	25	27	26	42
ANT antharacene	<0.2	0.27	0.40	1.4	0.35	9.7	0.30	<0.2	0.52	1.6
FLT fluoranthene	3.7	4.9	16	57	8.8	192	7.4	7.0	19	33
PYR pyrene	1.9	3.6	13	46	6.9	145	5.4	4.6	14	27
BaA benzo*[a]* anthracene	0.51	1.6	9.9	31	3.3	88	2.8	1.7	5.3	17
CHR chrysene	0.75	2.4	16	39	4.9	105	4.4	2.9	11	20
BbF benzo[b]fluoranthene	0.73	2.2	16	38	5.0	80	5.2	2.8	12	16
BkF benzo[k]fluoranthene	0.39	1.3	7.3	21	2.6	48	2.2	1.6	5.8	9.5
BaP benzo[a]pyrene	0.51	2.0	13	37	4.2	94	4.4	2.6	9.9	17
IPY idenol*[1,2,3-cd]* pyrene	0.66	2.0	12	32	4.4	54	3.9	2.2	8.2	14
DBA dibenz*[a,h]* anthracene	<0.04	<0.04	1.9	5.9	0.55	12	0.51	0.27	1.4	3.2
BPE benzo*[g,h,i]* perylene	1.1	2.1	12	33	4.6	48	4.2	2.8	8.8	15
PAH markers[b]										
cPHE	1.3	1.3	1.7	3.0	1.5	12	1.6	1.4		2.6
RET	1.8	1.8	2.1	2.0	2.1	2.6	2.1	2.2		2.6
cPYR	1.9	1.9	2.2	2.6	2.0	6.7	2.1	2.0		2.7
PER	2.7	2.9	4.2	6.8	3.2	10	3.1	2.9		5.7
COR	1.9	0.73	10.0	17	3.0	13	3.9	2.2		8.3
(MPHE/ANT)/PHE [-]	0.09	0.10	0.17	0.16	0.14	0.39	0.10	0.09	0.14	0.18
(MFLT/PYR)/PYR [-]	0.22	0.27	0.39	0.36	0.30	0.45	0.32	0.28	0.35	0.36
1,7-/(1,7-& 2,6 DmPHE) [-]	0.55	0.59	0.53	0.60	0.62	0.62	0.59	0.59	0.60	0.59
PCB ($\mu g/kg_{dw}$)										
PCB_7	0.84	0.74	1.2	1.6	0.78	0.91	1.0	0.63	2.0	2.1
PCB 28	0.06	0.04	0.06	0.07	<0.04	0.06	0.09	0.05	<0.04	0.07
PCB 52	0.15	0.10	0.15	0.21	0.06	0.15	0.16	0.13	0.14	0.23
PCB 101	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PCB 118	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.37
PCB 138	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.63	0.52
PCB 180	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.36	<0.3

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	60	61	62	63	64	65	66	67	68	69
Site description										
Altitude (m a.s.l.)	955	445	1'065	450	375	482	540	432	435	818
Land use	intensive grassland	urban park	deciduous forest	arable land	orchard	arable land	deciduous forest	horticulture	arable land	intensive grassland
Mean annual temperature (°C)	7	7.1	5.3	7.7	9.1	7.5	8	9.1	9.4	6.8
Mean annual precipitation (mm)	1'796	1'173	1'146	1'054	833	1'055	897	985	944	1'311
population density[a] (pers. km^{-1})	1'578	4'459	3'257	2'107	1'770	1'159	974	1'266	2'325	2'474
Main emission source	residential area	urban	residential area	residential area	road traffic	residential area	cement infustry	residential area	residential area	residential area
Distance to main emission source (km)	3.5	0.5	3	1	0.4	1.3	4.25	4	0.5	1
Type of area	rural	urban	rural	semi-rural	semi-rural	rural	rural	semi-rural	semi-rural	rural
Position in relation to inversion layer	above	below	above	below	below	below	below	below	below	above
Humus type	hydromull	mull	mull (moder)	mull	mull	mull	mull		mull	mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	3.7	2.1	4.2	2.0	4.1	1.2	6.2	23	1.4	3.2
pH (0.01 M $CaCl_2$)	5.2	4.8	4.9	5.3	7.2	5.5	6.9	7.0	5.9	5.8
PAH (µg/kg_{dw})										
PAH_{16}	158	646	176	219	264	234	175	350	159	97
NAP naphthalene	12	18	21	13	14	7.9	16	17	9.2	10
ACY acenaphthylene	0.41	5.0	0.84	1.7	0.69	0.84	0.60	1.1	0.67	<0.4
ACE acenaphthene	5.0	1.8	2.3	1.5	6.5	1.2	5.0	7.4	1.4	1.4
FLU fluoranthene	2.7	2.1	2.4	2.1	3.4	1.3	3.2	3.6	1.5	1.3
PHE phenanthrene	34	51	34	30	43	37	60	32	29	25
ANT antharacene	<0.2	4.2	0.78	1.2	1.00	0.62	0.52	1.9	0.47	0.36
FLT fluoranthene	19	80	23	32	34	45	21	49	20	11
PYR pyrene	14	70	16	24	26	32	14	39	16	8.4
BaA benzo*[a]* anthracene	8.3	45	6.3	12	15	13	5.8	24	8.5	3.9
CHR chrysene	9.9	51	12	17	20	18	8.7	28	12	5.9
BbF benzo[b]fluoranthene	13	69	16	20	25	19	8.7	36	16	6.4
BkF benzo[k]fluoranthene	6.1	31	5.9	9.7	11	9.6	4.8	17	7.8	3.3
BaP benzo[a]pyrene	12	87	13	21	21	19	8.0	35	14	6.2
IPY idenol*[1,2,3-cd]* pyrene	9.7	59	10	16	18	13	8.5	28	10	6.5
DBA dibenz*[a,h]* anthracene	1.4	12	1.7	3.0	4.8	3.1	1.1	5.8	1.6	0.86
BPE benzo*[g,h,i]* perylene	10	61	11	16	20	13	9.7	28	11	5.7
PAH markers[b]										
cPHE	0.88	3.3		1.4	1.7	1.9	1.3	1.8	0.76	0.65
RET	3.0	1.4		1.2	1.2	1.1	1.8	1.3	1.1	1.3
cPYR	1.2	2.2		1.5	1.7	1.6	1.6	1.7	1.4	1.3
PER	4.4	3.3		2.4	5.2	1.8	2.2	10	2.5	2.5
COR	7.5	30		8.2	14	6.1	11	11	4.2	3.7
(MPHE/ANT)/PHE [-]	0.11	0.27	0.15	0.20	0.20	0.17	0.11	0.21	0.16	0.12
(MFLT/PYR)/PYR [-]	0.37	0.39	0.35	0.37	0.42	0.37	0.33	0.35	0.45	0.36
1,7-/(1,7-& 2,6 DmPHE) [-]	0.59	0.57	0.60	0.58	0.57	0.55	0.59	0.58	0.58	0.57
PCB (µg/kg_{dw})										
PCB_7	0.94	1.7	2.0	1.1	1.8	0.85	1.7	1.7	0.63	0.63
PCB 28	0.07	0.07	<0.04	<0.04	0.07	0.07	0.11	0.06	<0.04	0.05
PCB 52	0.15	0.17	0.12	<0.04	0.17	0.16	0.33	0.13	<0.04	<0.04
PCB 101	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PCB 118	<0.2	<0.2	<0.2	<0.2	0.24	<0.2	<0.2	0.26	<0.2	<0.2
PCB 138	<0.5	<0.5	0.52	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	0.50	0.55	<0.5	0.55	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 180	<0.3	<0.3	0.36	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	70	71	72	73	74	75	76	77	78	79
Site description										
Altitude (m a.s.l.)	1'105	1'818	2'118	1'560	526	2'400	1'690	830	532	684
Land use	extensive grassland	extensive grassland	extensive grassland	coniferous forest	intensive grassland	conserva-tion sites	coniferous forest	arable land	arable land	arable land
Mean annual temperature (°C)	5.4	1.8	-0.7	2.6	8.3	0.2	4.4	9.1	8.5	7.2
Mean annual precipitation (mm)	1'245	1'700	1'173	1'007	1'179	722	696	951	1'005	1'106
population density[a)] (pers. km^{-1})	1'320	412	717	590	1'877	731	1'088	1'654	3'152	1'166
Main emission source	residential area	residential area	road traffic	residential area	residential area	road traffic	residential area	waste incineration	residential area	residential area
Distance to main emission source (km)	0.8	3	3	2	0.5	1.8	1.5	2.5	0.8	1
Type of area	rural	rural	remote	rural	semi-rural	remote	rural	rural	semi-rural	rural
Position in relation to inversion layer	above	above	above	above	below	above	above	above	below	below
Humus type	mull	mull	mull	moder/mull	mull	mull	mull (moder)	mull	mull	mull
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	3.5	4.9	6.3	5.6	5.0	3.6	5.2	2.4	3.3	1.0
pH (0.01 M $CaCl_2$)	5.1	4.4	4.7	4.3	5.4	4.9	4.9	6.7	7.1	5.1
PAH ($\mu g/kg_{dw}$)										
PAH_{16}	97	81	64	97	187	32	79	38	222	484
NAP naphthalene	7.1	12	12	9.5	15	5.8	8.9	6.5	11	8.4
ACY acenaphthylene	<0.4	<0.4	<0.4	<0.4	0.78	<0.4	<0.4	<0.4	0.65	0.59
ACE acenaphthene	2.2	2.3	2.8	3.3	4.0	2.3	4.3	1.1	4.7	2.5
FLU fluoranthene	1.5	3.1	2.5	2.7	2.8	1.4	2.3	0.97	3.8	2.2
PHE phenanthrene	21	50	28	42	46	13	38	13	48	63
ANT antharacene	0.63	<0.2	<0.2	0.24	0.83	<0.2	<0.2	<0.2	4.0	5.1
FLT fluoranthene	11	5.2	4.8	10.0	23	2.4	7.1	3.2	33	86
PYR pyrene	8.6	2.1	2.6	5.8	17	1.4	3.7	2.3	26	69
BaA benzo*[a]* anthracene	5.5	0.51	0.78	1.7	8.5	0.38	1.1	1.1	15	50
CHR chrysene	6.8	0.84	1.3	3.4	11	0.72	2.2	1.5	15	43
BbF benzo[b]fluoranthene	7.4	0.96	1.7	4.4	12	0.99	2.8	1.4	12	29
BkF benzo[k]fluoranthene	3.6	0.52	0.85	2.0	6.3	0.45	1.3	0.88	7.4	20
BaP benzo[a]pyrene	7.0	0.89	1.3	3.3	12	0.60	2.1	2.0	14	50
IPY idenol*[1,2,3-cd]* pyrene	7.0	0.85	2.6	3.6	13	0.92	2.7	1.3	11	23
DBA dibenz*[a,h]* anthracene	1.1	<0.04	<0.04	0.56	1.8	<0.04	0.34	0.19	3.2	8.4
BPE benzo*[g,h,i]* perylene	6.1	1.1	2.2	3.6	12	1.1	2.4	1.7	13	23
PAH markers[b)]										
cPHE	0.70	0.43	0.44	0.58	1.0	0.37	0.45	1.4	3.0	6.7
RET	2.7	4.8	1.2	15	1.3	1.1	9.1	3.3	2.7	2.7
cPYR	1.2	1.1	1.2	1.2	1.5	1.1	1.1	3.4	3.6	3.7
PER	3.2	2.1	2.2	2.4	3.8	2.1	2.2	4.2	4.9	9.1
COR	3.2	1.4	2.7	2.7	8.3	1.5	1.9	0.91	8.6	8.1
(MPHE/ANT)/PHE [-]	0.13	0.07	0.09	0.12	0.12	0.10	0.10	0.11	0.17	0.31
(MFLT/PYR)/PYR [-]	0.39	0.31	0.27	0.38	0.33	0.28	0.38	0.33	0.34	0.44
1,7-/(1,7-& 2,6 DmPHE) [-]	0.67	0.78	0.57	0.82	0.60	0.56	0.83	0.66	0.62	0.57
PCB ($\mu g/kg_{dw}$)										
PCB_7	0.76	0.91	0.77	1.8	1.9	0.49	1.3	0.69	1.5	0.93
PCB 28	<0.04	0.08	<0.04	<0.04	0.07	<0.04	0.07	<0.04	0.06	0.07
PCB 52	<0.04	0.26	0.16	0.28	0.15	<0.04	0.20	0.11	0.19	0.22
PCB 101	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
PCB 118	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCB 138	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 153	<0.5	<0.5	<0.5	<0.5	0.60	<0.5	<0.5	<0.5	<0.5	<0.5
PCB 180	<0.3	<0.3	<0.3	<0.3	0.42	<0.3	<0.3	<0.3	<0.3	<0.3

[a)] inhabitants in the community of the sampling site

[b)] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	80	81	82	83	84	85	86	87	88	89
Site description										
Altitude (m a.s.l.)	538	1'355	441	1'040	597	383	618	559	1'358	1'825
Land use	arable land	coniferous forest	deciduous forest	coniferous forest	conserva-tion sites	deciduous forest	arable land	arable land	coniferous forest	conserva-tion sites
Mean annual temperature (°C)	7.5	6	9.4	5.5	7.9	8.3	7.2	7.7	4.5	0.2
Mean annual precipitation (mm)	1'055	1'315	981	1'727	1'301	887	1'268	919	1'526	722
population density[a] (pers. km^{-1})	932	1'018	1'063	2'906	1'359	2'896	1'702	1'512	1'115	2'150
Main emission source	residential area	road traffic	road traffic	residential area	residential area	residential area	chemical industry	residential area	residential area	residential area
Distance to main emission source (km)	2	0.15	0.25	3	1	2	0.2	0.6	>3	1
Type of area	rural	rural	semi-rural	rural	semi-rural	semi-rural	rural	semi-rural	rural	semi-rural
Position in relation to inversion layer	below	above	below	above	below	below	below	below	above	above
Humus type	mull	mull	mull	mull (moder)	peat	mull	mull	mull	mull	peat
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	1.5	4.4	4.3	7.6	43	5.3	1.8	1.5	11	38
pH (0.01 M $CaCl_2$)	5.3	4.0	7.2	3.3	2.9	7.1	5.2	5.5	5.9	4.7
PAH (µg/kg_{dw})										
PAH_{16}	87	183	181	486	853	675	125	121	259	471
NAP naphthalene	7.4	20	29	11	99	13	7.0	6.8	22	47
ACY acenaphthylene	<0.4	0.55	0.68	1.3	9.4	1.4	0.58	0.60	0.77	1.0
ACE acenaphthene	<0.8	4.2	10	6.2	36	7.7	1.2	0.84	7.4	23
FLU fluoranthene	0.78	5.1	4.4	4.6	25	4.7	1.2	0.98	4.4	11
PHE phenanthrene	20	83	51	53	270	58	16	17	52	238
ANT antharacene	0.36	0.29	0.69	2.1	6.4	4.4	0.68	0.53	0.92	1.2
FLT fluoranthene	12	18	17	74	95	108	17	17	37	42
PYR pyrene	8.4	11	13	56	66	93	13	13	26	25
BaA benzo*[a]* anthracene	4.4	4.2	6.2	23	24	58	8.7	8.2	11	9.3
CHR chrysene	6.6	7.7	9.9	47	44	61	11	11	19	13
BbF benzo[b]fluoranthene	5.8	7.0	8.4	63	40	57	11	9.8	19	13
BkF benzo[k]fluoranthene	3.6	3.5	4.5	24	23	32	5.7	5.1	9.2	6.5
BaP benzo[a]pyrene	4.8	5.2	6.7	43	29	61	13	12	16	9.2
IPY idenol*[1,2,3-cd]* pyrene	5.9	5.6	7.3	36	38	50	8.0	8.3	16	15
DBA dibenz*[a,h]* anthracene	1.1	1.1	1.6	7.4	8.3	12	1.3	1.4	2.2	2.5
BPE benzo*[g,h,i]* perylene	5.9	6.2	9.5	34	39	53	9.7	8.6	17	15
PAH markers[b]										
cPHE	1.7	1.9	1.9		7.1	6.3	1.6	1.5	2.4	2.2
RET	2.6	3.4	3.5		36	4.0	1.9	2.4	5.4	185
cPYR	3.5	3.6	3.6		8.8	5.6	2.7	9.3	3.4	3.2
PER	2.6	2.9	3.4		9.0	16	2.2	1.7	4.0	224
COR	4.1	4.8	8.4		27	28	5.5	4.5	12	13
(MPHE/ANT)/PHE [-]	0.14	0.09	0.24	0.22	0.17	0.37	0.19	0.19	0.15	0.09
(MFLT/PYR)/PYR [-]	0.31	0.30	0.40	0.34	0.31	0.41	0.39	0.39	0.31	0.70
1,7-/(1,7-& 2,6 DmPHE) [-]	0.56	0.61	0.62	0.58	0.79	0.60	0.56	0.59	0.65	0.62
PCB (µg/kg_{dw})										
PCB_7	0.83	1.8	2.0	8.3	12	2.0	1.1	0.90	2.1	3.9
PCB 28	<0.04	0.13	0.10	0.22	0.41	<0.04	<0.04	<0.04	0.07	<0.04
PCB 52	0.12	0.43	0.19	0.20	1.5	0.12	0.07	0.08	0.23	1.2
PCB 101	<0.4	<0.4	<0.4	0.86	2.8	<0.4	<0.4	<0.4	<0.4	0.98
PCB 118	<0.2	<0.2	0.26	0.50	0.91	0.23	<0.2	<0.2	<0.2	0.21
PCB 138	<0.5	<0.5	<0.5	2.4	1.9	<0.5	<0.5	<0.5	<0.5	0.53
PCB 153	<0.5	<0.5	0.59	2.5	2.7	0.67	<0.5	<0.5	0.57	0.67
PCB 180	<0.3	<0.3	0.32	1.7	1.7	0.35	<0.3	<0.3	0.39	0.33

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	90	91	92	93	94	95	96	97	98	99
Site description										
Altitude (m a.s.l.)	1'245	1'517	1'080	405	209	336	265	273	455	830
Land use	coniferous forest	coniferous forest	deciduous forest	deciduous forest	horticulture	arable land	viticulture	urban park	extensive grassland	coniferous forest
Mean annual temperature (°C)	6.6	5.3	9.2	7.8	10.6	9.8	10.6	11.4	8.6	8.2
Mean annual precipitation (mm)	1'548	1'628	2'277	933	1'916	1'645	1'916	1'726	1'208	550
population density[a] (pers. km^{-1})	645	153	2'256	1'293	842	2'647	1'350	5'526	2'279	2'528
Main emission source	residential area	residential area	residential area	residential area	combustion plant	road traffic	residential area	city	road traffic	chemical industry
Distance to main emission source (km)	2.3	0.7	2	1	0.5	0.15	0.15	0.2	0.2	1.6
Type of area	rural	remote	rural	semi-rural	semi-rural	semi-rural	semi-rural	urban	semi-rural	semi-rural
Position in relation to inversion layer	above	above	above	below	below	below	below	below	below	within
Humus type	humified mod	moder/mull	mull (moder)	mull	mull	mull	mull	mull	mull	mull (moder)
Soil analytical data (0-20 cm)										
Total organic carbon (%dw)	12	6.8	11	2.2	1.8	1.2	3.8	2.3	4.4	5.0
pH (0.01 M $CaCl_2$)	3.4	3.7	3.7	4.6	6.4	6.0	6.1	5.0	5.9	5.4
PAH ($\mu g/kg_{dw}$)										
PAH_{16}	152	92	161	84	71	243	68	8'465	195	326
NAP naphthalene	20	12	14	6.5	<5.1	9.8	6.1	42	<5.1	7.5
ACY acenaphthylene	0.47	0.60	0.98	1.2	<0.4	0.41	<0.4	26	<0.4	0.48
ACE acenaphthene	8.9	3.7	7.8	2.1	2.7	1.4	2.5	28	2.2	7.5
FLU fluoranthene	4.3	2.8	3.6	1.4	1.6	1.1	1.7	22	1.4	4.1
PHE phenanthrene	40	34	31	12	15	39	25	517	25	49
ANT antharacene	0.59	<0.2	0.52	0.55	0.53	4.0	<0.2	75	1.8	3.4
FLT fluoranthene	14	6.9	16	11	8.7	37	6.6	1'375	30	50
PYR pyrene	11	4.5	12	8.7	6.7	29	4.2	1'128	24	38
BaA benzo*[a]* anthracene	4.5	1.8	4.9	4.0	2.8	19	1.9	660	13	17
CHR chrysene	8.1	3.4	11	6.0	4.7	20	2.7	740	17	31
BbF benzo[b]fluoranthene	9.2	4.6	14	6.2	4.8	18	3.8	737	17	29
BkF benzo[k]fluoranthene	4.5	2.0	7.2	3.1	2.9	9.2	1.6	445	9.9	18
BaP benzo[a]pyrene	6.9	3.3	9.3	11	4.4	22	2.9	1'129	17	26
IPY idenol*[1,2,3-cd]* pyrene	8.8	5.0	13	4.0	4.0	14	3.1	689	14	20
DBA dibenz*[a,h]* anthracene	1.4	0.55	1.6	0.79	0.41	3.1	0.57	110	3.2	4.0
BPE benzo*[g,h,i]* perylene	9.9	5.9	14	5.7	6.0	16	4.7	742	15	21
PAH markers[b]										
cPHE	1.4	1.3		1.5		2.2	0.60			
RET	8.5	5.0		2.8		2.1	0.88			
cPYR	2.8	3.0		2.8		2.9	0.95			
PER	2.6	2.1		1.7		2.5	1.5			
COR	8.2	7.7		4.1		7.4	2.7			
(MPHE/ANT)/PHE [-]	0.10	0.09	0.14	0.24	0.14	0.16	0.09	0.49	0.22	0.18
(MFLT/PYR)/PYR [-]	0.51	0.29	0.43	0.33	0.28	0.32	0.29	0.33	0.40	0.39
1,7-/(1,7-& 2,6 DmPHE) [-]	0.74	0.72	0.59	0.62	0.58	0.57	0.53	0.53	0.53	0.63
PCB ($\mu g/kg_{dw}$)										
PCB_7	3.5	2.0	5.7	1.4	1.9	1.9	2.4	4.2	6.3	2.9
PCB 28	<0.04	0.07	<0.04	<0.04	<0.04	0.05	0.06	<0.04	<0.04	0.20
PCB 52	0.16	0.25	0.16	0.07	0.04	0.13	0.12	<0.04	0.13	0.16
PCB 101	0.52	<0.4	0.49	<0.4	<0.4	<0.4	<0.4	0.58	<0.4	0.57
PCB 118	0.32	<0.2	0.24	<0.2	<0.2	<0.2	<0.2	0.24	<0.2	0.23
PCB 138	0.59	<0.5	1.6	<0.5	<0.5	<0.5	<0.5	1.1	0.52	0.61
PCB 153	1.1	0.53	1.7	<0.5	0.56	0.61	0.75	1.4	1.7	0.74
PCB 180	0.90	0.39	1.5	0.31	0.32	0.41	0.56	0.89	3.5	0.43

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE

Site number	100	101	102	103	104	105
Site description						
Altitude (m a.s.l.)	2'340	730	379	431	1'025	1'138
Land use	extensive grassland	viticulture	arable land	arable land	extensive grassland	extensive grassland
Mean annual temperature (°C)	-1.6	8.5	9.1	10.1	7.2	5.7
Mean annual precipitation (mm)	2'099	575	881	1'015	1'307	1'245
population density[a] (pers. km^{-1})	582	1'294	1'842	1'016	2'797	5'391
Main emission source	residential area	residential area	residential area	road traffic	residential area	residential area
Distance to main emission source (km)	1.5	0.7	0.8	0.015	>3	>3
Type of area	remote	semi-rural	semi-rural	semi-rural	rural	rural
Position in relation to inversion layer	above	below	below	below	above	above
Humus type	mull	mull	mull	mull	mull	mull
Soil analytical data (0-20 cm)						
Total organic carbon (%dw)	4.9	1.9	1.1	2.3	3.9	5.8
pH (0.01 M $CaCl_2$)	4.3	7.3	7.2	6.6	4.4	6.2
PAH (µg/kg_{dw})						
PAH_{16}	110	629	479		106	225
NAP naphthalene	8.7	6.8	6.7	5.4	6.7	8.5
ACY acenaphthylene	<0.4	0.79	1.3	1.6	0.49	0.80
ACE acenaphthene	5.3	3.6	1.4	1.2	1.3	<0.8
FLU fluoranthene	2.6	2.2	1.9	1.6	1.6	1.1
PHE phenanthrene	27	44	34	28	26	12
ANT antharacene	0.42	3.7	4.1	2.9	0.54	1.0
FLT fluoranthene	12	92	98	73	14	25
PYR pyrene	8.8	75	91	58	10	21
BaA benzo*[a]* anthracene	3.9	70	22	31	4.4	15
CHR chrysene	5.6	52	44	39	6.4	18
BbF benzo[b]fluoranthene	7.9	62	33	45	8.4	22
BkF benzo[k]fluoranthene	3.5	35	23	22	3.7	12
BaP benzo[a]pyrene	5.9	79	46		7.2	50
IPY idenol*[1,2,3-cd]* pyrene	6.1	47	34	35	5.9	18
DBA dibenz*[a,h]* anthracene	1.1	13	4.9	7.4	1.7	3.1
BPE benzo*[g,h,i]* perylene	10.0	43	33	37	6.9	18
PAH markers[b]						
cPHE	0.86	4.1	6.8	4.4	0.92	1.8
RET	1.2	1.4	3.0	1.2	1.7	1.2
cPYR	1.2	1.5	3.7	1.8	1.3	2.1
PER	2.2	20	15		1.8	3.4
COR	6.1	14	16	27	7.4	10
(MPHE/ANT)/PHE [-]	0.12	0.37	0.46	0.38	0.14	0.39
(MFLT/PYR)/PYR [-]	0.28	0.53	0.31	0.33	0.31	0.49
1,7-/(1,7-& 2,6 DmPHE) [-]	0.54	0.59	0.63	0.56	0.75	0.59
PCB (µg/kg_{dw})						
PCB_7	0.68	2.0	1.0	6.0	1.2	1.3
PCB 28	0.08	0.08	0.05	0.04	0.06	0.06
PCB 52	0.19	0.20	0.09	0.46	0.12	0.22
PCB 101	<0.4	<0.4	<0.4	1.0	<0.4	<0.4
PCB 118	<0.2	<0.2	<0.2	0.97	<0.2	<0.2
PCB 138	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
PCB 153	<0.5	0.54	<0.5	1.6	<0.5	<0.5
PCB 180	<0.3	0.40	<0.3	0.70	<0.3	<0.3

[a] inhabitants in the community of the sampling site

[b] cPHE: 4-Hcyclopenta[def]PHE, RET: retene, cPYR: cylopenta[cd]PYR, COR: coronene, (MPHE&ANT)/PHE: ratio of methylPHE and –ANT to PHE, (MFLT&PYR)/PYR: ratio of methylFLT and -PYR to PYR, 1,7-/(1,7-&2,6-)DmPHE: the ratio of 1,7- to 1,7- and 2,6-dimethylPHE