

### **Supplementary File 1. Chemical analyses of POP in cord blood serum samples**

Plasma samples (2 mL) were extracted on a Strata-X 100 m (100 mg/ 3 mL; Phenomenex; Torrance, California, USA) solid phase extraction (SPE) column. A mixture of <sup>13</sup>C-labeled internal standards, plasma sample, formic acid and deionized water was slowly applied to the column. After drying the column with pressurized nitrogen, the sample was extracted using 3 mL of dichloromethane. The extracts (taken up in 0.5 mL hexane) were cleaned up through a column containing activated florisil (1 g) and the compounds were eluted using a mixture of hexane/dichloromethane (3:1) and dichloromethane. The solvent was evaporated, taken up in 20 L of hexane and analyzed for PCBs and organochlorine pesticides on an Agilent 6890 Network gas chromatograph (GC) coupled with an Agilent 5973 Network mass spectrometer (MS) (Agilent Technologies; Mississauga, Ontario, Canada). The GC was fitted with an Agilent 60 m DB-XLB column (0.25 mm i.d., 0.25 μm film thickness). The carrier gas was helium, and all injections were in splitless mode. The MS was operated in single ion monitoring (SIM), using negative chemical ionization (NCI) with methane (99.97 %) as the reagent gas.

**Supplementary Table 1. Characteristics of the included population (n=268) compared to the initial random sub-cohort (n=601)**

	Random sub-cohort (n=601) <sup>a</sup>	Included (n=268)	p-value <sup>b</sup>
<b>Maternal characteristics</b>	N (%) or median (Q1 ; Q3)	N (%) or median (Q1 ; Q3)	
<b>Maternal age (years)</b>			
< 25	76 (12.7)	31 (11.6)	0.68
25-30	229 (38.1)	108 (40.3)	
30-35	213 (35.4)	99 (36.9)	
≥ 35	83 (13.8)	30 (11.2)	
Continuous	29.9 (27.1 ; 32.7)	29.9 (27.2 ; 32.5)	0.83
<b>Education level</b>			
Primary/secondary	116 (19.3)	45 (16.8)	0.62
Graduated from secondary school	111 (18.5)	48 (17.9)	
Post-secondary	373 (62.3)	175 (65.3)	
Missing	1		
<b>Body mass index</b>			
< 18.5	52 (8.7)	23 (8.6)	0.56
18.5-25	449 (74.7)	208 (77.6)	
≥ 25	100 (16.6)	37 (13.8)	
Continuous	21.5 (19.8 ; 23.5)	21.4 (19.9 ; 23.4)	0.96
<b>Smoking status</b>			
No smoker	421 (70.9)	194 (72.5)	0.72
Stop smoking at the beginning of the pregnancy	77 (13.0)	30 (11.4)	
Smoker at inclusion	96 (16.2)	40 (15.2)	
Missing	7	4	
<b>Alcohol consumption</b>			

Never	503 (85.3)	225 (85.9)	0.13
Occasionally	78 (13.2)	33 (12.6)	
Regularly (once a day)	9 (1.5)	4 (1.5)	
Missing	11	6	
<b>Parity</b>			
0	268 (44.7)	114 (42.5)	0.84
1	217 (36.2)	101 (37.7)	
≥ 2	115 (19.2)	53 (19.8)	
Missing	1		
<b>High blood pressure</b>			
No	555 (94.6)	257 (95.9)	0.40
Yes	32 (5.5)	11 (4.1)	
Missing	14	0	
<b>Newborn characteristics</b>			
<b>Sex</b>			
Boy	308 (51.3)	132 (49.2)	0.59
Girl	293 (48.8)	136 (50.8)	
Gestational age (weeks)	40 (39 ; 40)	40 (39 ; 40)	0.83
Birth weight (g)	3370 (3100 ; 3690)	3370 (3100 ; 3670)	0.59
Z-score of birth BMI	0.19 (-0.45 ; 0.81)	0.25 (-0.42 ; 0.83)	0.66
<b>Levels of exposures</b>			
DAP (nmol/l)	40.59 (14.85 ; 89.79)	39.05 (14.67 ; 85.64)	0.62
DM (nmol/l)	32.55 (10.32 ; 73.69)	30.67 (10.02 ; 70.86)	0.68
DE (nmol/l)	0.19 (<LOQ ; 12.84)	0.05 (<LOQ ; 11.59)	0.69
PCB153 (ug/l)	0.110 (0.075 ; 0.160)	0.110 (0.077 ; 0.150)	0.93
PCB187 (ug/l)	0.013 (<LOD ; 0.020)	0.013 (<LOD ; 0.019)	0.81
Sum of 3 PCB (nmol/l)	0.325 (0.226 ; 0.460)	0.331 (0.227 ; 0.460)	0.59
BetaHCH (ug/l)	0.042 (0.030 ; 0.064)	0.041 (0.030 ; 0.062)	0.52

pp'DDE (ug/l)	0.185 (0.100 ; 0.300)	0.190 (0.100 ; 0.300)	0.79
Hexachlorobenzene (ug/l)	0.033 (0.010 ; 0.051)	0.033 (0.022 ; 0.051)	0.59

BMI, body mass index ; DAP, dialkylphosphate; DE, diethylphosphate; DM, dimethylphosphate; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyl; p-p'-DDE, p-p'-dichlorodiphenyldichloroethylene

<sup>a</sup> N=394 for levels of POP exposures and N=579 for levels of OP exposures

<sup>b</sup> chi-squared test for categorical variables and Kruskal-Wallis for continuous variables.

**Supplementary Table 2. Distribution of hormone levels in cord blood (N=268)**

	N	N (%) > LD	N outliers	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	Geometric mean
<b>Adiponectin (µg/mL)</b>									
Overall	268	268 (100.0)	2	23.60	30.50	38.90	48.80	59.90	40.14
Boys	132	132 (100.0)	2	21.70	28.10	35.30	44.00	55.05	37.02
Girls	136	136 (100.0)	0	25.20	33.10	41.70	52.20	62.30	43.12
<b>Insulin (µU/mL)</b>									
Overall	268	249 (92.9)	0	1.50	2.20	3.50	5.55	7.60	3.39
Boys	132	121 (91.7)	0	1.20	2.10	3.20	5.40	6.90	3.14
Girls	136	128 (94.1)	0	1.60	2.30	3.70	6.00	8.90	3.65

The percentiles and the geometric means were calculated excluding the outliers for adiponectin and excluding cord blood samples with substantial hemolysis for Insulin (n=16)

**Supplementary Table 3.** Associations between newborn and maternal characteristics and the levels of adiponectin and insulin for the overall study population and by newborn sex.

	Insulin ( $\mu\text{U/ml}$ )				Adiponectin ( $\mu\text{g/ml}$ )			
	Total	Boys	Girls	P interact with sex	Total	Boys	Girls	P interact with sex
Categorical covariates <sup>a</sup>	Geometric Mean (GSD)	Geometric Mean (GSD)	Geometric Mean (GSD)		Mean (SD)	Mean (SD)	Mean (SD)	
Newborn Sex	P=0.10	-	-	-	P=0.0005	-	-	-
Boys	3.0 (2.2)	-	-	-	37.0 (13)	-	-	-
Girls	3.7 (2.0)	-	-	-	43.1 (15)	-	-	-
Maternal age (years)	P=0.09	P=0.05	P=0.74	P=0.33	P=0.18	P=0.75	P=0.16	P=0.78
< 25	3.3 (2.5)	3.3 (2.2)	3.3 (2.5)		39.2 (13)	36.0 (14)	42.2 (11)	
25-30	3.3 (1.8)	3.0 (2.0)	3.7 (1.6)		38.0 (13)	35.8 (12)	40.0 (13)	
30-35	3.3 (2.2)	2.7 (2.0)	3.7 (2.5)		42.2 (16)	38.5 (14)	46.4 (16)	
$\geq$ 35	4.5 (1.8)	5.5 (2.0)	4.1 (1.8)		41.7 (17)	36.9 (14)	45.4 (18)	
Education level	P=0.44	P=0.62	P=0.41	P=0.78	P=0.48	P=0.98	P=0.49	P=0.73
Primary/secondary	4.1 (2.2)	3.7 (2.0)	4.5 (2.7)		38.6 (15)	36.6 (14)	41.5 (17)	
Passed baccalaureate examination	3.3 (2.2)	3.3 (2.5)	3.3 (1.8)		38.8 (13)	36.9 (15)	40.5 (10)	
Post-secondary	3.3 (2.0)	3.0 (2.0)	3.7 (2.0)		40.9 (15)	37.2 (13)	44.1 (16)	

Body mass index (kg/m <sup>2</sup> )	P=0.21	P=0.98	P=0.01	P=0.10	P=0.61	P=0.22	P=0.30	P=0.15
< 18.5	3.3 (2.0)	3.0 (2.2)	3.7 (1.6)		42.0 (18)	35.3 (12)	50.0 (20)	
18.5-25	3.3 (2.0)	3.3 (2.2)	3.3 (2.0)		39.7 (14)	36.3 (13)	42.7 (15)	
≥ 25	4.1 (2.5)	3.0 (2.2)	6.0 (2.5)		41.6 (12)	41.7 (14)	41.6 (10)	
Smoking status	P=0.41	P=0.18	P=0.50	P=0.19	P=0.52	P=0.53	P=0.49	P=0.43
No smoker	3.3 (2.2)	3.0 (2.2)	3.7 (2.0)		40.8 (14)	37.7 (12)	43.6 (16)	
Stop smoking at the beginning of the pregnancy	4.1 (1.8)	4.5 (2.0)	3.7 (1.8)		39.6 (15)	33.4 (16)	45.0 (11)	
Smoker at inclusion	3.0 (1.8)	3.0 (1.8)	3.0 (2.0)		37.9 (15)	36.7 (16)	39.4 (14)	
Alcohol consumption	P=0.40	P=0.07	P=0.86	P=0.10	P=0.06	P=0.65	P=0.12	P=0.64
Never	3.3 (2.0)	3.0 (2.2)	3.7 (2.0)		39.4 (14)	36.8 (13)	42.0 (15)	
Occasionally	4.1 (2.0)	5.0 (2.0)	3.3 (2.0)		44.0 (15)	37.8 (13)	47.6 (15)	
Regularly (once a day)	4.1 (2.0)	5.0 (3.0)	3.0 (1.1)		28.9 (9)	28.7 (5)	29.1 (16)	
Parity	P=0.02	P=0.18	P=0.03	P=0.27	P=0.33	P=0.72	P=0.03	P=0.04
0	3.0 (2.2)	2.7 (2.2)	3.0 (2.0)		39.2 (14)	37.4 (14)	40.9 (15)	
1	3.7 (2.0)	3.7 (2.2)	3.7 (1.8)		41.8 (16)	35.9 (13)	47.4 (16)	
≥ 2	4.1 (2.0)	3.0 (1.8)	5.0 (2.2)		38.9 (12)	38.3 (12)	39.5 (12)	
High blood pressure	P=0.11	P=0.03	P=0.90	P=0.12	P=0.79	P=0.98	P=0.70	P=0.80
No	3.3 (2.0)	3.0 (2.0)	3.7 (2.0)		40.2 (14)	37.0 (13)	43.2 (15)	

Yes	5.0 (2.2)	6.7 (3.0)	3.7 (1.5)		39.0 (13)	36.9 (15)	40.8 (13)	
Preterm birth (<37 weeks)	P=0.56	P=0.31	P=0.80	P=0.38	P=0.02	P=0.13	P=0.09	P=0.58
No	3.3 (2.0)	3.0 (2.0)	3.7 (2.0)		40.5 (14)	37.4 (13)	43.4 (15)	
Yes	4.1 (3.3)	4.5 (5.5)	3.3 (1.2)		28.4 (14)	28.3 (11)	28.6 (20)	
<b>Continuous covariates<sup>b</sup></b>	<b>Rho (p-value)</b>	<b>Rho (p-value)</b>	<b>Rho (p-value)</b>		<b>Rho (p-value)</b>	<b>Rho (p-value)</b>	<b>Rho (p-value)</b>	
Maternal age (years)	0.13 (0.04)	0.10 (0.28)	0.14 (0.13)	P=0.89	0.05 (0.43)	0.04 (0.62)	0.06 (0.48)	P=0.97
Maternal pre-pregnancy body mass index (kg/m <sup>2</sup> )	0.14 (0.03)	0.13 (0.14)	0.18 (0.04)	P=0.17	-0.04 (0.49)	0.02 (0.78)	-0.15 (0.09)	P=0.05
Gestational age at birth (weeks)	-0.03 (0.65)	-0.01 (0.91)	-0.11 (0.21)	P=0.19	0.005 (0.94)	-0.03 (0.70)	0.002 (0.98)	P=0.32
Birth weight (g)	0.25 (<0.0001)	0.22 (0.01)	0.38 (<0.0001)	P=0.28	-0.03 (0.61)	-0.08 (0.39)	0.02 (0.78)	P=0.64
Z-score of birth weight	0.35 (<0.0001)	0.30 (0.0006)	0.43 (<0.0001)	P=0.73	0.01 (0.83)	-0.02 (0.83)	0.001 (0.99)	P=0.90
Z-score of birth bmi	0.23 (0.0003)	0.23 (0.009)	0.33 (0.0002)	0.67	0.05 (0.37)	0.05 (0.56)	0.03 (0.74)	0.75

GSD: Geometric standard deviation

<sup>a</sup>P-values resulting from a test of Student, with a log-transformation of insulin

<sup>b</sup>P-values resulting from a Spearman's rank correlation test, with a log-transformation of insulin



**Supplementary Table 4. Prenatal exposure to organophosphate pesticides and levels of insulin and adiponectin, additionally adjusted for z-score of body mass index at birth**

	Log(Insulin) <sup>b</sup>			Adiponectin		
	N	LSmeans ( $\mu$ U/mL)	Beta (95% CI) <sup>a</sup>	N	LSmeans ( $\mu$ g/mL)	Beta (95% CI) <sup>a</sup>
<b>DAP (nmol/l)</b>			P-trend=0.06			P-trend=0.74
≤ 14.67	60	3.6	Ref.	64	35.9	Ref.
14.67 – 38.84	59	4.5	0.22 (-0.04 ; 0.48)	62	34.9	-1.03 (-6.15 ; 4.10)
38.84 – 85.65	59	4.5	0.21 (-0.05 ; 0.47)	62	37.6	1.72 (-3.42 ; 6.86)
> 85.65	61	4.8	0.27 (0.01 ; 0.53)	64	35.9	-0.03 (-5.20 ; 5.15)
<b>DM (nmol/l)</b>			P-trend=0.04			P-trend=0.51
≤ 10.024	60	3.4	Ref.	64	35.7	Ref.
10.024 – 30.66	59	5.0	0.38 (0.12 ; 0.63)	63	34.8	-0.93 (-6.04 ; 4.18)
30.66 – 70.86	61	4.6	0.30 (0.05 ; 0.55)	62	37.7	2.04 (-3.07 ; 7.15)
> 70.86	59	4.7	0.32 (0.06 ; 0.58)	63	36.5	0.77 (-4.43 ; 5.97)
<b>DE (nmol/l)</b>			P-trend=0.25			P-trend=0.89
≤0.10	121	4.2	Ref.	126	35.9	Ref.
0.10 – 11.59	60	4.3	0.03 (-0.19 ; 0.25)	63	37.8	1.94 (-2.45 ; 6.33)
> 11.59	58	4.8	0.14 (-0.09 ; 0.37)	63	35.1	-0.73 (-5.19 ; 3.72)

CI, confidence interval; DAP, dialkylphosphate; DE, diethylphosphate; DM, dimethylphosphate; LSmeans, least-squares means

<sup>a</sup> Adjusted for creatinine (continuous), hemolysis (3 categories), maternal age (continuous), maternal body mass index (2 categories), educational level (3 categories), smoking status (3 categories), parity (3 categories), high blood pressure (2 categories), sex (2 categories), z-score of birth BMI (continuous) and gestational age (continuous).

<sup>b</sup> Excluding serum with substantial hemolysis (n=16)

**Supplementary Table 5. Associations between DAP, betaHCH and pp'DDE, and Insulin, and Adiponectin by newborn sex**

	Log(Insuline) <sup>b</sup>			Adiponectin		
	N	LSmeans ( $\mu$ U/mL)	Beta (95% CI) <sup>a</sup>	N	LSmeans ( $\mu$ g/mL)	Beta (95% CI) <sup>a</sup>
<b>DAP (nmol/l)</b>						
<b>Boys</b>	P-trend=0.12			P-trend=0.18		
≤ 14.67	30	3.8	Ref.	31	35.6	Ref.
14.67 – 38.84	28	4.4	0.15 (-0.25 ; 0.55)	28	34.1	-1.5 (-8.5 ; 5.6)
38.84 – 85.65	27	5.3	0.34 (-0.07 ; 0.74)	28	36.1	0.5 (-6.6 ; 7.7)
> 85.65	36	4.9	0.26 (-0.11 ; 0.63)	37	39.4	3.8 (-2.7 ; 10.3)
<b>Girls</b>	P-trend=0.64			P-trend=0.49		
≤ 14.67	30	3.8	Ref.	33	38.5	Ref.
14.67 – 38.84	31	4.4	0.15 (-0.23 ; 0.53)	34	37.3	-1.1 (-8.8 ; 6.6)
38.84 – 85.65	32	3.7	-0.02 (-0.39 ; 0.35)	34	39.4	0.9 (-6.7 ; 8.5)
> 85.65	25	4.6	0.19 (-0.23 ; 0.61)	27	34.1	-4.4 (-12.8 ; 4.1)
Interaction with sex	P=0.69			P=0.34		
<b>BetaHCH (ug/l)</b>						
<b>Boys</b>	P-trend=0.79			P-trend=0.68		
≤0.029	32	5.3	Ref.	33	37.6	Ref.
0.029 – 0.040	34	3.7	-0.34 (-0.72 ; 0.05)	36	32.3	-5.3 (-12.1 ; 1.5)
0.040 – 0.061	31	4.4	-0.17 (-0.57 ; 0.23)	30	39.2	1.7 (-5.7 ; 9.0)
>0.061	29	4.5	-0.14 (-0.56 ; 0.27)	31	36.4	-1.1 (-8.5 ; 6.2)
<b>Girls</b>	P-trend=0.79			P-trend=0.73		
≤0.029	28	5.0	Ref.	31	33.5	Ref.
0.029 – 0.040	31	3.7	-0.31 (-0.68 ; 0.07)	31	40.3	6.8 (-0.9 ; 14.5)
0.040 – 0.061	33	4.3	-0.15 (-0.53 ; 0.23)	36	32.8	-0.7 (-8.3 ; 6.8)
>0.061	33	4.3	-0.14 (-0.53 ; 0.25)	37	37.8	4.2 (-3.4 ; 11.9)
Interaction with sex	P=0.98			P=0.03		
<b>pp'DDE (ug/l)</b>						
<b>Boys</b>	P-trend=0.75			P-trend=0.32		
≤ 0.100	36	4.3	Ref.	37	34.4	Ref.
0.100 – 0.180	28	4.8	0.11 (-0.27 ; 0.49)	29	38.9	4.5 (-2.4 ; 11.3)
0.180 – 0.290	28	5.2	0.19 (-0.19 ; 0.58)	30	40.7	6.3 (-0.5 ; 13.1)
> 0.290	34	4.5	0.04 (-0.33 ; 0.41)	34	37.3	2.9 (-3.8 ; 9.5)

<b>Girls</b>	P-trend=0.09			P-trend=0.03		
≤ 0.100	26	5.1	Ref.	30	39.5	Ref.
0.100 – 0.180	35	4.2	-0.18 (-0.54 ; 0.18)	35	39.5	-0.1 (-7.5 ; 7.3)
0.180 – 0.290	32	4.1	-0.23 (-0.61 ; 0.15)	36	36.5	-3.0 (-10.5 ; 4.4)
> 0.290	32	3.7	-0.33 (-0.71 ; 0.05)	34	31.9	-7.6 (-15.3 ; 0.01)
Interaction with sex	P=0.74			P=0.04		

CI, confidence interval; DAP, dialkylphosphate; HCH, hexachlorocyclohexane; LSmeans, least-squares means; p-p'-DDE, p-p'-dichlorodiphenyldichloroethylene.

<sup>a</sup> Adjusted for total lipid or creatinine level (continuous), hemolysis (2 categories), maternal age (continuous), body mass index (2 categories), educational level (3 categories), smoking status (3 categories), parity (3 categories) and high blood pressure (2 categories) <sup>b</sup> Excluding serum with substantial hemolysis (n=16)

**Supplementary Table 6. Prenatal exposure to persistent organic pollutants and levels of insulin and adiponectin, additionally adjusted for z-score of body mass index at birth**

	Log(Insuline) <sup>b</sup>			Adiponectin		
	N	LSmeans ( $\mu$ U/mL)	Beta (95% CI) <sup>a</sup>	N	LSmeans ( $\mu$ g/mL)	Beta (95% CI) <sup>a</sup>
<b>PCB153 (ug/l)</b>			P-trend=0.15			P-trend=0.24
≤0.077	63	4.4	Ref.	67	38.6	Ref.
0.077 – 0.111	74	4.8	0.09 (-0.15 ; 0.33)	75	34.8	-3.72 (-8.52 ; 1.07)
0.111 – 0.150	57	4.2	-0.06 (-0.32 ; 0.21)	60	35.3	-3.21 (-8.55 ; 2.12)
>0.150	57	3.7	-0.19 (-0.47 ; 0.10)	63	34.9	-3.58 (-9.18 ; 2.03)
<b>PCB187 (ug/l)</b>			P-trend=0.14			P-trend=0.15
≤ 0.010	122	4.6	Ref.	126	37.9	Ref.
0.010 – 0.018	67	4.2	-0.08 (-0.30 ; 0.14)	70	35.8	-2.06 (-6.48 ; 2.37)
> 0.018	62	3.8	-0.18 (-0.42 ; 0.06)	69	34.5	-3.40 (-9.17 ; 1.38)
<b>Sum of PCBs 118, 138, 170 (ug/l)</b>			P-trend=0.55			P-trend=0.47
≤0.223	63	4.3	Ref.	67	38.5	Ref.
0.223 – 0.331	66	4.7	0.09 (-0.15 ; 0.34)	66	34.1	-4.41 (-9.31 ; 0.49)
0.331 – 0.461	62	4.4	0.03 (-0.23 ; 0.29)	66	35.4	-3.12 (-8.16 ; 1.92)
>0.461	60	4.0	-0.08 (-0.35 ; 0.20)	66	36.2	-2.29 (-7.66 ; 3.07)
<b>BetaHCH (ug/l)</b>			P-trend=0.99			P-trend=0.88
≤0.029	60	5.0	Ref.	64	36.0	Ref.
0.029 – 0.040	65	3.6	-0.31 (-0.56 ; -0.05)	67	37.0	1.05 (-4.08 ; 6.18)
0.040 – 0.061	64	4.2	-0.16 (-0.41 ; 0.10)	66	36.1	0.15 (-5.02 ; 5.32)
>0.061	62	4.6	-0.08 (-0.35 ; 0.20)	68	36.8	0.81 (-4.61 ; 6.23)
<b>pp'DDE (ug/l)</b>			P-trend=0.61			P-trend=0.24
≤ 0.100	62	4.5	Ref.	67	36.5	Ref.
0.100 – 0.180	63	4.2	-0.07 (-0.32 ; 0.18)	64	39.7	3.21 (-1.76 ; 8.19)
0.180 – 0.290	60	4.5	0.001 (-0.26 ; 0.26)	66	38.2	1.71 (-3.30 ; 6.72)
> 0.290	66	4.1	-0.09 (-0.35 ; 0.17)	68	33.7	-2.74 (-7.77 ; 2.28)
<b>Hexachlorobenzene (ug/l)</b>			P-trend=0.59			P-trend=0.69
≤ 0.022	65	4.3	Ref.	69	37.5	Ref.
0.022 – 0.033	61	3.8	-0.14 (-0.39 ; 0.11)	65	35.5	-1.95 (-6.82 ; 2.92)
0.033 – 0.051	63	4.7	0.07 (-0.17 ; 0.32)	64	36.1	-1.37 (-6.34 ; 3.60)
> 0.051	62	4.4	0.01 (-0.25 ; 0.26)	67	36.3	-1.22 (-6.25 ; 3.81)

CI, confidence interval; HCH, hexachlorocyclohexane; LSmeans, least-squares means; PCB, PCB, polychlorinated biphenyl; p-p'-DDE, p-p'-dichlorodiphenyldichloroethylene.

<sup>a</sup>Adjusted for total lipid level (continuous), hemolysis (2categories), maternal age (continuous), body mass index (2 categories), educational level (3 categories), smoking status (3 categories), parity (3 categories), high blood pressure (2 categories), sex (2 categories), z-score of birth BMI (continuous) and gestational age (continuous).

<sup>b</sup>Excluding serum with substantial hemolysis (n=16)

**Supplementary Table 7. Prenatal co-exposure to PCB-153, betaHCH, and DDE and levels of insulin and adiponectin**

	Log(Insuline) <sup>b</sup>			Adiponectin		
	N	LSmeans ( $\mu$ U/mL)	Beta (95% CI) <sup>a</sup>	N	LSmeans ( $\mu$ g/mL)	Beta (95% CI) <sup>a</sup>
<b>PCB153 (ug/l)</b>						
<b>Overall</b>			P-trend=0.11			P-trend=0.31
$\leq 0.077$	63	4.49	Ref.	67	39.70	Ref.
0.077 – 0.111	74	4.88	0.08 (-0.18 ; 0.34)	75	34.60	-5.10 (-10.23 ; 0.03)
0.111 – 0.150	57	4.21	-0.07 (-0.38 ; 0.25)	60	35.20	-4.50 (-10.63 ; 1.63)
$> 0.150$	57	3.34	-0.30 (-0.67 ; 0.08)	63	35.68	-4.03 (-11.30 ; 3.24)
<b>Boys</b>			P-trend=0.17			P-trend=0.72
$\leq 0.077$	33	5.05	Ref.	27	38.62	Ref.
0.077 – 0.111	37	5.55	0.10 (-0.32 ; 0.51)	30	37.16	-1.46 (-8.97 ; 6.06)
0.111 – 0.150	30	4.10	-0.21 (-0.71 ; 0.30)	38	35.21	-3.41 (-12.54 ; 5.72)
$> 0.150$	26	3.47	-0.37 (-0.99 ; 0.24)	35	37.23	-1.39 (-12.59 ; 9.81)
<b>Girls</b>			P-trend=0.35			P-trend=0.83
$\leq 0.077$	30	4.47	Ref.	32	38.14	Ref.
0.077 – 0.111	37	4.20	-0.06 (-0.45 ; 0.33)	37	33.69	-4.45 (-12.46 ; 3.57)
0.111 – 0.150	27	4.58	0.02 (-0.41 ; 0.46)	30	36.87	-1.26 (-10.0 ; 7.47)
$> 0.150$	31	3.30	-0.30 (-0.81 ; 0.20)	36	35.71	-2.42 (-12.69 ; 7.85)
<b>BetaHCH (ug/l)</b>						
<b>Overall</b>			P-trend=0.61			P-trend=0.30
$\leq 0.029$	60	4.77	Ref.	64	34.47	Ref.
0.029 – 0.040	65	3.36	-0.35 (-0.62 ; -0.08)	67	36.42	1.95 (-3.34 ; 7.24)
0.040 – 0.061	64	4.11	-0.15 (-0.44 ; 0.15)	66	36.05	1.58 (-4.18 ; 7.34)
$> 0.061$	62	4.69	-0.02 (-0.34 ; 0.31)	68	38.25	3.78 (-2.58 ; 10.15)
<b>Boys (ug/l)</b>			P-trend=0.84			P-trend=0.86
$\leq 0.029$	32	5.25	Ref.	33	38.89	Ref.
0.029 – 0.040	34	3.68	-0.36 (-0.79 ; 0.08)	36	33.42	-5.46 (-13.20 ; 2.27)
0.040 – 0.061	31	4.29	-0.20 (-0.68 ; 0.28)	30	39.29	0.40 (-8.36 ; 9.16)
$> 0.061$	29	4.81	-0.09 (-0.62 ; 0.44)	31	36.62	-2.26 (-11.84 ; 7.32)
<b>Girls</b>			P-trend=0.38			P-trend=0.16
$\leq 0.029$	28	4.31	Ref.	31	32.00	Ref.
0.029 – 0.040	31	3.28	-0.27 (-0.67 ; 0.12)	31	38.68	6.68 (-1.27 ; 14.63)
0.040 – 0.061	33	4.22	-0.02 (-0.44 ; 0.40)	36	32.89	0.89 (-7.60 ; 9.38)
$> 0.061$	33	4.74	0.10 (-0.34 ; 0.54)	37	40.84	8.85 (-0.05 ; 17.74)

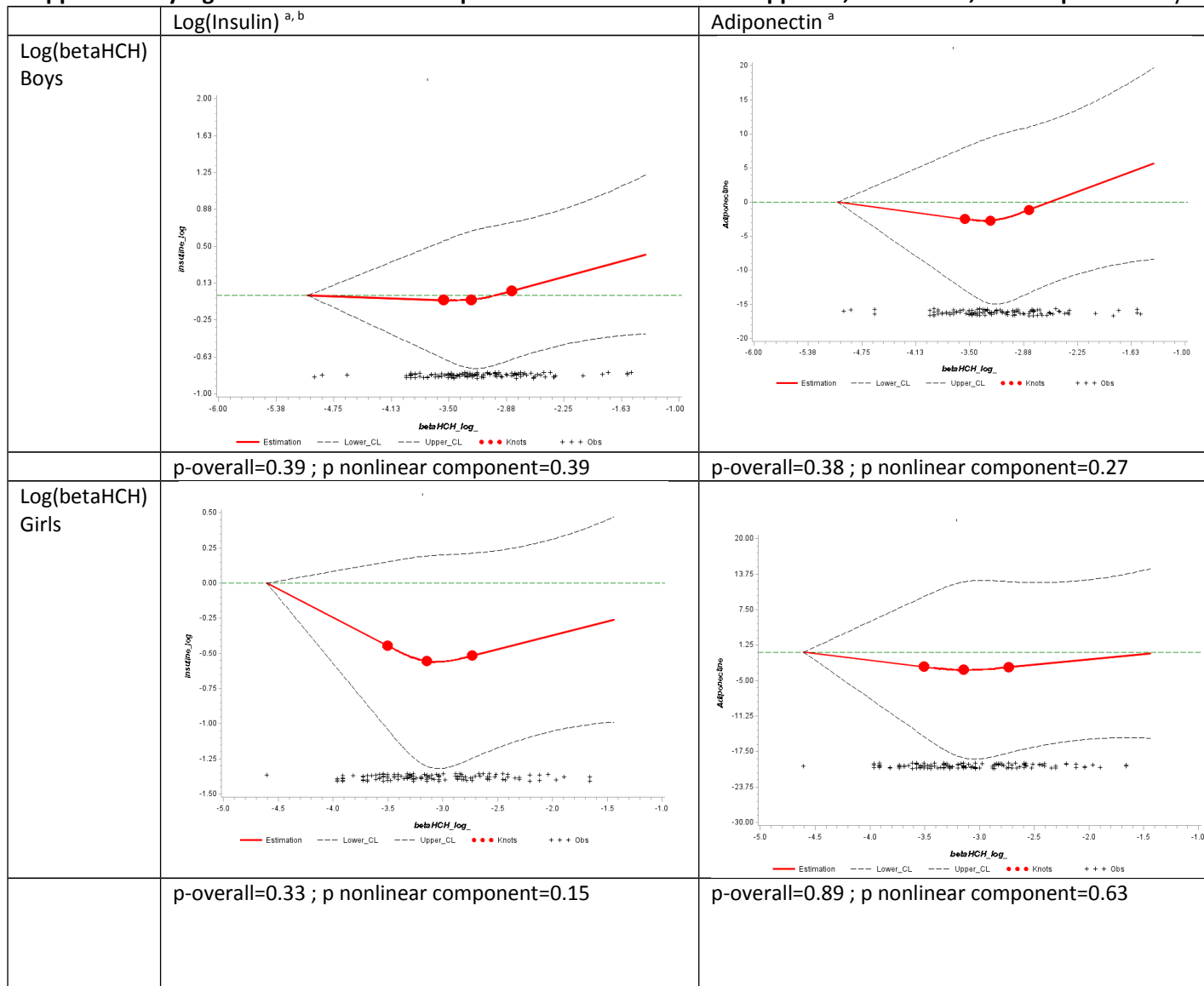
<b>pp'DDE (ug/l)</b>						
<b>Overall</b>		P-trend=0.98			P-trend=0.41	
≤ 0.100	62	4.14	Ref.	67	35.07	Ref.
0.100 – 0.180	63	4.21	0.02 (-0.25 ; 0.28)	64	39.34	4.27 (-0.95 ; 9.50)
0.180 – 0.290	60	4.31	0.04 (-0.26 ; 0.34)	66	37.78	2.71 (-2.94 ; 8.37)
> 0.290	66	4.11	-0.01 (-0.32 ; 0.30)	68	32.99	-2.07 (-8.06 ; 3.92)
<b>Boys</b>		P-trend=0.17			P-trend=0.39	
≤ 0.100	36	3.55	Ref.	37	33.06	Ref.
0.100 – 0.180	28	4.53	0.24 (-0.16 ; 0.65)	29	38.70	5.64 (-1.67 ; 12.96)
0.180 – 0.290	28	5.11	0.36 (-0.08 ; 0.80)	30	39.78	6.73 (-1.14 ; 14.60)
> 0.290	34	4.85	0.31 (-0.15 ; 0.77)	34	36.68	3.63 (-4.68 ; 11.94)
<b>Girls</b>		P-trend=0.16			P-trend=0.03	
≤ 0.100	26	4.92	Ref.	30	38.90	Ref.
0.100 – 0.180	35	4.14	-0.17 (-0.56 ; 0.22)	35	39.64	0.75 (-7.22 ; 8.71)
0.180 – 0.290	32	3.94	-0.22 (-0.65 ; 0.21)	36	36.26	-2.64 (-11.16 ; 5.87)
> 0.290	32	3.53	-0.33 (-0.78 ; 0.12)	34	29.62	-9.28 (-18.36 ; -0.20)

CI, confidence interval; HCH, hexachlorocyclohexane; LSmeans, least-squares means; PCB, PCB, polychlorinated biphenyl; p-p'-DDE, p-p'-dichlorodiphenyldichloroethylene.

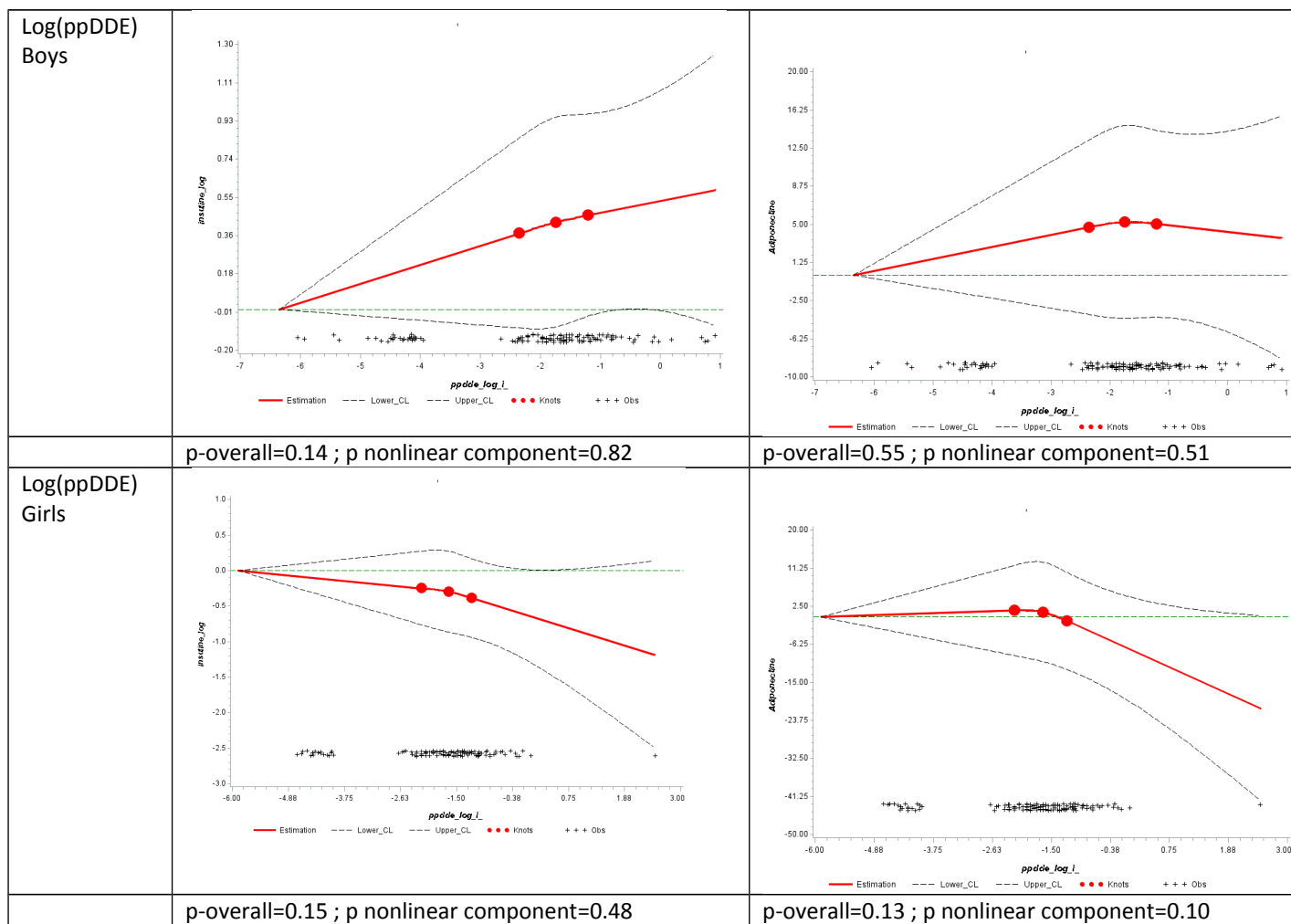
<sup>a</sup> Adjusted for total lipid level (continuous), hemolysis (2 categories), maternal age (continuous), body mass index (2 categories), educational level (3 categories), smoking status (3 categories), parity (3 categories), high blood pressure (2 categories) and sex (2 categories)

<sup>b</sup> Excluding serum with substantial hemolysis (n=16)

**Supplementary Figure 1. Restricted cubic splines between betaHCH and pp'DDE, and Insulin, and Adiponectin by newborn sex**







HCB, hexachlorobenzene; HCH, hexachlorocyclohexane; PCB, PCB, polychlorinated biphenyl; p-p'-DDE, p-p'-dichlorodiphenyldichloroethylene.

We performed restricted cubic spline regressions, using imputed persistent organic pollutants concentrations in logscale. Three knots, located at the 25th, 50th, and 75th percentiles of the exposure distribution were chosen. The reference value used to calculate the 95% CI was the minimal exposure value.

<sup>a</sup> Adjusted for total lipid (continuous), hemolysis (2 categories), maternal age (continuous), body mass index (2 categories), education (3 categories), smoking status (3 categories), parity (3 categories), high blood pressure (2 categories), and sex (2 categories)

<sup>b</sup> Excluding serum with substantial hemolysis (n=16)