

Table 1. Linear regression models of maternal OH-PCB concentrations and infant' thyroid hormone levels (n=222).

	Thyroid hormones															
	TSH						FT4									
	Crude			Adjusted			Crude			Adjusted						
	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value				
Total infants ^a																
∑OH-PCB	0.065	-0.072	0.201	0.351	0.078	-0.068	0.225	0.294	0.022	-0.010	0.055	0.182	0.036	0.001	0.071	0.041
4-OH-CB146+3-OH-CB153	0.040	-0.052	0.132	0.392	0.043	-0.054	0.140	0.379	0.006	-0.016	0.028	0.600	0.008	-0.015	0.032	0.484
4-OH-CB187	0.069	-0.037	0.175	0.200	0.077	-0.037	0.191	0.187	0.022	-0.003	0.048	0.083	0.031	0.004	0.058	0.024
Boys ^b																
∑OH-PCB	-0.014	-0.221	0.193	0.896	-0.005	-0.263	0.254	0.972	0.033	-0.014	0.079	0.168	0.051	-0.007	0.109	0.081
4-OH-CB146+3-OH-CB153	-0.002	-0.149	0.144	0.975	-0.017	-0.192	0.159	0.851	0.022	-0.011	0.055	0.190	0.023	-0.017	0.062	0.253
4-OH-CB187	0.059	-0.110	0.228	0.491	0.072	-0.128	0.273	0.476	0.019	-0.019	0.057	0.329	0.027	-0.018	0.073	0.236
Girls ^b																
∑OH-PCB	0.150	-0.028	0.329	0.098	0.178	-0.009	0.366	0.062	0.013	-0.034	0.060	0.577	0.028	-0.019	0.074	0.241
4-OH-CB146+3-OH-CB153	0.083	-0.034	0.200	0.164	0.109	-0.013	0.232	0.080	-0.007	-0.037	0.024	0.670	-0.003	-0.034	0.028	0.861
4-OH-CB187	0.088	-0.047	0.222	0.198	0.094	-0.050	0.238	0.198	0.027	-0.008	0.061	0.133	0.031	-0.005	0.066	0.088

a; Adjusted for maternal factors (maternal age, pre-pregnancy BMI, annual household income, fish consumption, smoking during pregnancy, AMC and/or ATG positive and blood sampling period for OH-PCBs) and infant factors (sex, birth weight, caesarean section, gestational weeks of birth and gestational weeks of blood sampling for thyroid hormone tests)

b; Adjusted for maternal factors (maternal age, pre-pregnancy BMI, annual household income, fish consumption, smoking during pregnancy, AMC and/or ATG positive and blood sampling period for OH-PCBs) and infant factors (birth weight, caesarean section, gestational weeks of birth and gestational weeks of blood sampling for thyroid hormone tests)

Table 2. Linear regression models of maternal OH-PCB concentrations and infant' thyroid hormone levels according to SNP types (n=222)

Gene	SNPs	n	TSH				FT4			
			Adjusted				Adjusted			
			B	(95% CI)		p-value	B	(95% CI)		p-value
AhR	AG/GG	178	0.098	-0.059	0.255	0.220	0.051	0.014	0.089	0.007
	AA	42	-0.125	-0.615	0.365	0.605	-0.039	-0.160	0.082	0.517
AhRR	CC	79	0.174	-0.083	0.431	0.181	0.003	-0.054	0.060	0.914
	CG	110	0.026	-0.211	0.263	0.828	0.067	0.009	0.125	0.025
	GG	31	-0.114	-0.449	0.222	0.483	0.011	-0.094	0.116	0.826
CYP1A2	CC	26	0.447	-0.262	1.156	0.187	0.144	0.036	0.192	0.009
	AC	102	0.040	0.205	0.286	0.745	0.023	-0.038	0.084	0.460
	AA	92	0.066	-0.143	0.276	0.532	0.034	-0.019	0.087	0.202
GSTP	AA	164	0.169	0.008	0.329	0.040	0.045	0.003	0.087	0.036
	AG	53	-0.348	-0.716	0.021	0.064	0.026	-0.058	0.109	0.536
NQO1	AA	83	0.049	-0.213	0.311	0.709	0.052	-0.012	0.116	0.106
	AG	105	0.192	-0.045	0.430	0.111	0.044	-0.013	0.100	0.125
	GG	32	0.020	-0.360	0.401	0.911	-0.011	-0.105	0.084	0.812

Adjusted for maternal factors (maternal age, pre-pregnancy BMI, annual household income, fish consumption, smoking during pregnancy, AMC and/or ATG positive and blood sampling period for OH-PCBs) and infant factors (sex, birth weight, caesarean

section, gestational weeks of birth and gestational weeks of blood sampling for thyroid hormone tests).

Table 3. Linear regression models of maternal OH-PCB concentrations and BSID scores (n=98 and 76).

	BSID scores															
	6M (n=98)								18M (n=76)							
	MDI				PDI				MDI				PDI			
	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	
Total infants																
Σ OH-PCB	-1.752	-5.904	2.398	0.404	-6.785	-14.160	0.590	0.071	4.386	-2.869	11.640	0.232	0.467	-7.700	8.634	0.909
4-OH-CB146+3-OH-CB153	-1.958	-4.572	0.655	0.140	-2.890	-7.622	1.841	0.228	3.738	-0.844	8.319	0.108	-1.601	-6.967	3.765	0.553
4-OH-CB187	-1.371	-4.567	1.825	0.396	-4.477	-10.184	1.230	0.123	-0.595	-6.484	5.293	0.841	-3.111	-9.598	3.375	0.342
Boys																
Σ OH-PCB	-3.763	-9.435	1.909	0.186	-4.845	-15.805	6.114	0.375	7.104	-3.434	17.642	0.178	1.018	-11.071	13.108	0.864
4-OH-CB146+3-OH-CB153	-3.017	6.808	0.734	0.115	-1.046	-8.541	6.450	0.778	3.521	-2.733	9.774	0.259	-5.146	-12.426	2.134	0.159
4-OH-CB187	-2.033	-6.343	2.278	0.344	-4.927	-13.056	3.201	0.226	2.310	-6.540	11.160	0.597	-0.763	-10.119	8.593	0.869
Girls																
Σ OH-PCB	-0.886	-7.410	5.637	0.786	-9.357	-20.693	1.980	0.104	0.781	-9.903	11.466	0.882	0.832	-12.433	14.098	0.899
4-OH-CB146+3-OH-CB153	-1.378	-5.460	2.764	0.513	-4.010	-11.297	3.277	0.274	3.087	-4.718	10.893	0.425	3.002	-6.732	12.736	0.533
4-OH-CB187	-1.334	-6.434	3.766	0.601	-4.909	-13.933	4.116	0.279	-2.526	-10.872	5.820	0.540	-3.619	-13.957	6.718	0.479

Adjusted for maternal age, parity, annual household income, smoking during pregnancy, intake of seaweed more than once a week, and gestational days for birth, caesarian section, and sex).

Table 4. Linear regression models of thyroid hormones and BSID scores (n=98 and 76).

	BSID scores															
	6M (n=98)							18M (n=76)								
	MDI			PDI				MDI			PDI					
	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	B	(95% CI)	p-value	
Total infants																
Maternal TSH^a	2.918	-0.925	6.762	0.135	1.896	-4.816	8.608	0.576	3.425	-3.671	10.521	0.339	2.991	-4.985	10.967	0.457
Maternal FT4^a	-5.704	-19.390	7.982	0.410	7.360	-16.316	31.037	0.538	10.467	-14.237	35.170	0.400	-24.423	-50.827	1.981	0.069
Infant TSH^b	2.027	-2.363	6.416	0.361	6.583	-0.994	14.160	0.088	1.191	-6.427	8.808	0.756	-2.116	-10.783	6.551	0.628
Infant FT4^b	-5.591	-21.681	10.499	0.492	-19.996	-47.859	7.867	0.157	1.512	-28.376	31.461	0.918	-2.564	-36.678	31.551	0.881
Boys																
Maternal TSH^a	2.697	2.856	8.250	0.330	-3.514	-14.136	7.107	0.505	2.784	-8.921	14.488	0.630	-2.150	-14.235	9.934	0.718
Maternal FT4^a	14.044	-32.848	4.759	0.138	22.896	-13.122	58.914	0.204	-9.207	-55.197	36.783	0.685	-15.594	-56.063	24.875	0.437
Infant TSH^b	3.167	-3.032	9.366	0.307	5.716	-5.341	16.773	0.301	9.645	-0.787	20.077	0.069	1.294	-11.658	14.246	0.840
Infant FT4^b	-5.383	-31.410	20.644	0.677	19.704	-26.349	65.757	0.391	42.264	2.731	81.797	0.037	28.694	-20.293	77.681	0.241
Girls																
Maternal TSH^a	3.020	2.877	8.918	0.308	5.790	-4.235	15.815	0.251	6.214	-4.317	16.745	0.237	8.160	-4.052	20.372	0.182
Maternal FT4^a	1.838	19.701	23.378	0.864	-3.175	-39.900	33.550	0.863	9.374	-25.659	44.406	0.588	-24.275	-64.289	15.739	0.224
Infant TSH^b	0.630	-6.030	7.290	0.850	6.427	-4.945	17.799	0.262	-2.170	-13.604	9.265	0.701	-4.392	-17.425	8.640	0.497
Infant FT4^b	-7.345	-29.845	15.156	0.515	-45.337	-82.183	-8.490	0.017	-42.662	-87.554	2.229	0.062	-24.014	-77.847	29.820	0.370

a; Adjusted for parity, maternal education, intake of seaweed more than once a week, caffeine intake per day, AMC/ATG positive, gestational week of blood sampling for thyroid hormones, gestational days for birth, caesarian section, and sex.

Table 5. Distribution of thyroid hormone levels in mothers and infants.

	TSH (μ U/mL)		FT3 (ng/mL)		FT4 (ng/mL)	
	Median	IQR	Median	IQR	Median	IQR
Mothers	0.83	0.33-1.45	3.04	2.78-3.37	1.35	1.22-1.50
Total infants	7.98	5.73-12.24	1.29	1.16-1.45	1.30	1.21-1.43
Boys	8.65	5.98-13.44	1.29	1.16-1.44	1.30	1.20-1.43
Girls	7.44	5.55-11.13	1.30	1.15-1.47	1.30	1.21-1.43

IQR: interquartile range, LOD: limit of detection,

Table 6. Linear regression models of maternal PFAA levels and thyroid hormone levels among mothers (n=782).

	TSH				T3				T4			
	Crude		Adjust		Crude		Adjust		Crude		Adjust	
	B (95% CI)	p-value										
PFHxS (C6)	-0.015 -0.316, 0.286	0.923	-0.079 -0.415, 0.258	0.646	0.007 -0.035, 0.049	0.744	0.021 -0.024, 0.066	0.364	0.012 -0.034, 0.057	0.605	0.029 -0.021, 0.079	0.250
PFOS (C8)	-0.112 -0.457, 0.233	0.524	-0.090 -0.473, 0.294	0.646	0.033 -0.014, 0.080	0.171	0.028 -0.022, 0.079	0.272	0.046 -0.004, 0.096	0.073	0.037 -0.018, 0.091	0.186
PFOA (C8)	0.079 -0.178, 0.337	0.545	-0.063 -0.360, 0.232	0.674	0.009 -0.027, 0.044	0.624	0.024 -0.015, 0.063	0.235	0.004 -0.033, 0.042	0.821	0.030 -0.011, 0.073	0.155
PFNA (C9)	-0.080 -0.385, 0.224	0.605	-0.079 -0.419, 0.261	0.649	0.024 -0.018, 0.066	0.263	0.022 -0.023, 0.067	0.334	0.024 -0.020, 0.069	0.288	0.024 -0.025, 0.072	0.339
PFDA (C10)	0.068 -0.209, 0.344	0.630	0.085 -0.223, 0.393	0.590	-0.003 -0.041, 0.035	0.884	-0.004 -0.044, 0.036	0.840	0.010 -0.031, 0.050	0.639	0.005 -0.038, 0.049	0.813
PFUnDA (C11)	0.044 -0.148, 0.235	0.655	0.098 -0.109, 0.306	0.353	-0.007 -0.033, 0.020	0.627	-0.003 -0.030, 0.025	0.854	0.014 -0.014, 0.042	0.336	0.009 -0.021, 0.038	0.556
PFDoDA (C12)	0.062 -0.282, 0.406	0.724	0.208 -0.169, 0.587	0.278	-0.004 -0.050, 0.041	0.851	0.004 -0.044, 0.053	0.855	0.021 -0.029, 0.070	0.420	0.018 -0.035, 0.072	0.502
PFTTrDA (C13)	0.319 0.016, 0.622	0.039	0.360 0.030, 0.690	0.033	-0.028 -0.070, 0.014	0.194	-0.017 -0.061, 0.027	0.455	-0.007 -0.052, 0.038	0.757	-0.003 -0.050, 0.044	0.893

Adjusted for maternal factors; age, pre-pregnancy BMI, gestational weeks of thyroid hormone measurement, parity, annual income, and smoking habit during pregnancy.

Table 7. Linear regression models of maternal PFAA levels and thyroid hormone levels among boy infants (n=408).

	TSH				T3				T4			
	Crude		Adjust		Crude		Adjust		Crude		Adjust	
	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value
PFHxS (C6)	0.008 -0.090, 0.107	0.870	0.032 -0.119, 0.184	0.674	-0.037 -0.125, 0.051	0.412	-0.017 -0.156, 0.123	0.816	-0.023 -0.053, 0.007	0.134	-0.009 -0.056, 0.038	0.695
PFOS (C8)	0.234 0.097, 0.370	0.001	0.376 0.182, 0.570	< 0.001	0.055 -0.069, 0.179	0.385	0.171 -0.013, 0.354	0.069	-0.032 -0.074, 0.010	0.131	-0.023 -0.085, 0.039	0.474
PFOA (C8)	0.043 -0.059, 0.145	0.406	0.014 -0.143, 0.172	0.857	-0.024 -0.115, 0.067	0.607	0.035 -0.110, 0.181	0.633	-0.030 -0.061, 0.001	0.057	0.001 -0.048, 0.050	0.973
PFNA (C9)	0.001 -0.130, 0.131	0.993	0.031 -0.159, 0.221	0.747	-0.080 -0.196, 0.037	0.180	-0.080 -0.255, 0.095	0.368	-0.020 -0.060, 0.019	0.313	-0.007 -0.066, 0.052	0.815
PFDA (C10)	-0.010 -0.115, 0.095	0.854	0.050 -0.113, 0.212	0.549	-0.090 -0.183, 0.004	0.061	-0.082 -0.232, 0.068	0.284	-0.039 -0.071, -0.007	0.017	-0.044 -0.094, 0.006	0.083
PFUnDA (C11)	0.002 -0.080, 0.084	0.961	0.068 -0.057, 0.193	0.288	-0.018 -0.092, 0.055	0.621	-0.084 -0.199, 0.032	0.154	0.001 -0.024, 0.026	0.923	-0.011 -0.050, 0.028	0.575
PFDoDA (C12)	-0.016 -0.123, 0.092	0.775	0.030 -0.126, 0.187	0.704	-0.019 -0.115, 0.077	0.704	-0.055 -0.200, 0.089	0.450	0.013 -0.020, 0.045	0.448	0.005 -0.043, 0.054	0.835
PFTrDA (C13)	0.050 -0.052, 0.152	0.336	0.114 -0.027, 0.254	0.112	0.006 -0.085, 0.098	0.896	-0.008 -0.139, 0.123	0.905	0.025 -0.006, 0.056	0.108	0.023 -0.021, 0.066	0.308

Adjusted for maternal factors (age, parity, annual household income, educational level, alcohol consumption during pregnancy, logTSH, logFT3, logFT4) and infant factors (birthweight and gestational age at birth).

Table 8. Linear regression models of maternal PFAA levels and thyroid hormone levels among girl infants (n=374).

	TSH				T3				T4			
	Crude		Adjust		Crude		Adjust		Crude		Adjust	
	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value
PFHxS (C6)	0.092 -0.004, 0.189	0.059	0.075 -0.055, 0.204	0.257	-0.024 -0.122, 0.074	0.626	0.006 -0.139, 0.151	0.936	0.012 -0.026, 0.050	0.538	0.032 -0.015, 0.079	0.187
PFOS (C8)	0.019 -0.121, 0.158	0.792	-0.039 -0.228, 0.150	0.682	-0.019 -0.161, 0.122	0.787	0.071 -0.140, 0.282	0.509	-0.007 -0.062, 0.048	0.804	-0.040 -0.109, 0.029	0.249
PFOA (C8)	0.023 -0.077, 0.122	0.658	-0.017 -0.153, 0.119	0.807	-0.053 -0.154, 0.048	0.305	0.006 -0.147, 0.158	0.942	0.000 -0.039, 0.040	0.984	-0.017 -0.067, 0.033	0.513
PFNA (C9)	0.017 -0.099, 0.133	0.776	-0.059 -0.213, 0.095	0.453	0.003 -0.114, 0.121	0.956	0.042 -0.131, 0.214	0.633	-0.030 -0.076, 0.015	0.190	-0.041 -0.097, 0.015	0.153
PFDA (C10)	-0.048 -0.157, 0.062	0.391	-0.071 -0.215, 0.073	0.330	0.079 -0.031, 0.190	0.160	0.131 -0.029, 0.292	0.108	-0.019 -0.062, 0.024	0.384	-0.008 -0.061, 0.045	0.772
PFUnDA (C11)	0.013 -0.068, 0.094	0.754	-0.020 -0.129, 0.088	0.713	0.012 -0.070, 0.095	0.767	0.028 -0.093, 0.149	0.650	-0.004 -0.036, 0.028	0.826	0.002 -0.038, 0.041	0.940
PFDoDA (C12)	-0.045 -0.143, 0.052	0.363	-0.111 -0.238, 0.016	0.086	0.067 -0.032, 0.166	0.182	0.039 -0.104, 0.183	0.587	0.035 -0.003, 0.073	0.074	-0.015 -0.062, 0.032	0.525
PFTTrDA (C13)	-0.002 -0.101, 0.098	0.973	-0.034 -0.154, 0.086	0.579	0.022 -0.078, 0.123	0.664	0.027 -0.107, 0.161	0.690	0.012 -0.028, 0.051	0.561	-0.007 -0.051, 0.037	0.765

Adjusted for maternal factors (age, parity, annual household income, educational level, alcohol consumption during pregnancy, logTSH, logFT3, logFT4) and infant factors (birthweight and gestational age at birth).

Table 9. Linear regression models of maternal PFAA levels and thyroglobulin antibody (TgAb) levels among infants.

	Total infants (n=782)				Boys (n=408)				Girls (n=374)			
	Crude		Adjust		Crude		Adjust		Crude		Adjust	
	B (95% CI)	p-value	B (95% CI)	p-value								
PFHxS (C6)	0.045 -0.008, 0.098	0.097	0.057 -0.026, 0.139	0.176	0.043 -0.026, 0.112	0.223	0.115 0.004, 0.226	0.042	0.045 -0.037, 0.127	0.282	-0.002 -0.128, 0.124	0.971
PFOS (C8)	0.016 -0.060, 0.093	0.674	-0.020 -0.135, 0.095	0.736	-0.011 -0.110, 0.087	0.823	-0.018 -0.168, 0.132	0.810	0.046 -0.073, 0.165	0.447	-0.034 -0.217, 0.150	0.720
PFOA (C8)	0.053 -0.002, 0.108	0.060	0.033 0.000, 0.066	0.048	0.008 -0.064, 0.081	0.819	0.015 -0.027, 0.056	0.484	0.099 0.014, 0.183	0.022	0.052 -0.001, 0.104	0.053
PFNA (C9)	0.048 -0.019, 0.115	0.162	0.075 -0.026, 0.177	0.146	0.012 -0.080, 0.104	0.802	0.006 -0.134, 0.147	0.931	0.079 -0.019, 0.178	0.114	0.127 -0.022, 0.276	0.094
PFDA (C10)	-0.008 -0.066, 0.051	0.801	-0.037 -0.128, 0.054	0.421	-0.034 -0.108, 0.040	0.365	-0.126 -0.245, -0.007	0.038	0.026 -0.068, 0.120	0.587	0.030 -0.0111, 0.171	0.674
PFUnDA (C11)	0.002 -0.042, 0.047	0.929	-0.015 -0.085, 0.054	0.665	-0.027 -0.084, 0.030	0.356	-0.079 -0.171, 0.013	0.091	0.035 -0.035, 0.104	0.326	0.035 -0.071, 0.141	0.511
PFDoDA (C12)	0.017 -0.038, 0.073	0.540	0.010 -0.075, 0.094	0.825	-0.015 -0.091, 0.060	0.687	0.035 -0.080, 0.150	0.546	0.049 -0.034, 0.133	0.245	-0.015 -0.140, 0.111	0.815
PFTTrDA (C13)	-0.058 -0.113, -0.002	0.041	-0.098 -0.174, -0.021	0.013	-0.080 -0.152, -0.009	0.028	-0.112 -0.214, -0.010	0.032	-0.035 -0.120, -0.050	0.423	-0.089 -0.205, 0.027	0.132

Adjusted for maternal factors (age, parity) and infant factors (birthweight and gestational age at birth). PFOS: perfluorooctane sulfonate, PFOA: perfluorooctanoate.