

**Supplemental Material**

**Serum Perfluorooctanoic Acid and Perfluorooctane Sulfonate  
Concentrations in Relation to Birth Outcomes in the Mid-Ohio Valley,  
2005-2010**

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**Supplemental Material Table S1.** Adjusted<sup>a</sup> Associations Between Model Covariates and Pregnancy Outcomes

	<b>LBW</b>	<b>PIH</b>	<b>Preterm</b>	<b>Term birth weight</b>
	OR (95% CI)	OR (95% CI)	OR (95% CI)	Δ in grams (95% CI)
<b>Maternal age at conception (years)</b>				
<30	1.0 (ref)	1.0 (ref)	1.0 (ref)	0 (ref)
30-35	0.51 (0.24, 1.11)	1.40 (0.84, 2.32)	0.99 (0.63, 1.54)	55 (-2, 112)
35+	1.85 (0.89, 3.84)	0.96 (0.42, 2.18)	1.48 (0.83, 2.64)	22 (-65, 109)
<b>Education (years)</b>				
<12	1.39 (0.58, 3.30)	1.36 (0.56, 3.31)	1.05 (0.51, 2.15)	-173 (-272, -74)
12	1.0 (ref)	1.0 (ref)	1.0 (ref)	0 (ref)
13-15	0.55 (0.33, 0.93)	1.31 (0.78, 1.21)	0.85 (0.56, 1.28)	30 (-28, 87)
16+	0.44 (0.21, 0.90)	0.85 (0.43, 1.68)	0.49 (0.28, 0.87)	84 (10, 157)
<b>Body Mass index (BMI)</b>				
Underweight (<18.5)	1.54 (0.63, 3.74)	1.07 (0.24, 4.77)	1.69 (0.75, 3.77)	-123 (-234, -12)
Normal (18.5-<25)	1.0 (ref)	1.0 (ref)	1.0 (ref)	0 (ref)
Overweight (25-<30)	0.62 (0.35, 1.10)	1.43 (0.81, 2.53)	0.77 (0.49, 1.20)	50 (-6, 107)
Obese (>=30)	0.47 (0.26, 0.84)	2.61 (1.55, 4.39)	0.76 (0.50, 1.15)	112 (54, 171)
<b>Parity</b>				
0	1.0	1.0	1.0	0
1+	0.55 (0.35, 0.86)	0.54 (0.36, 0.83)	0.67 (0.48, 0.94)	58 (16, 99)
<b>Diabetes</b>	1.13 (0.32, 3.93)	2.16 (0.99, 4.68)	2.97 (1.53, 5.78)	98 (-23, 218)
<b>Smoking status at conception</b>				
Never smoker	1.0	1.0 (ref)	1.0 (ref)	0 (ref)
Former smoker	0.95 (0.50, 1.82)	0.85 (0.51, 1.42)	0.70 (0.45, 1.10)	-29 (-88, 29)
Current smoker	1.89 (1.09, 3.24)	0.92 (0.54, 1.55)	0.84 (0.53, 1.31)	-183 (-243, -123)

<sup>a</sup> adjusted for all variables listed in Table

Supplemental Material Table S2. Adjusted<sup>a</sup> Associations from Sensitivity Analyses of Preterm Birth (<37 weeks)

Model Variant	N births	N cases	PFOA OR (95% CI) per ln increase	PFOS OR (95% CI) per ln increase
A. Primary model	1628	158	0.93 (0.78, 1.10)	1.02 (0.78, 1.35)
B. PFOA and PFOS in same model	1628	158	0.92 (0.77, 1.10)	1.06 (0.79, 1.42)
C. Limit to nulliparous prospective pregnancies <sup>b</sup>	318	34	1.06 (0.69, 1.63)	0.65 (0.39, 1.08)
D. Excluding diabetics	1562	142	0.96 (0.81, 1.14)	1.07 (0.80, 1.44)
E. For births in 2005, 2006, 2007	1063	116	0.86 (0.70, 1.05)	0.88 (0.65, 1.20)
F. Including term for birth year <sup>c</sup>	1628	158	0.94 (0.79, 1.11)	1.03 (0.78, 1.36)
G. Control for BMI using cubic term	1628	158	0.93 (0.79, 1.10)	1.03 (0.78, 1.36)
H. Nulliparous (first births)	570	66	0.85 (0.63, 1.14)	0.83 (0.56, 1.25)
I. Parous (second and higher order births)	1058	92	0.97 (0.80, 1.18)	1.13 (0.74, 1.72)

<sup>a</sup> unless otherwise specified, adjusted for maternal age (cubic terms), educational level (<12 years, 12, 13-15, 16+), smoking status (current, former, non), parity (0, 1+), BMI (underweight, normal, overweight, obese), self-reported diabetes, time between conception and serum measurement (year strata)

<sup>b</sup> conception occurred after serum measurement at enrollment

<sup>c</sup> including indicator terms for birth year instead of indicator terms for years since serum measurement

Supplemental Material Table S3. Adjusted<sup>a</sup> Associations from Sensitivity Analyses of Pregnancy-Induced Hypertension

<b>Model Variant</b>	<b>N births</b>	<b>N cases</b>	<b>PFOA OR (95% CI) per ln increase</b>	<b>PFOS OR (95% CI) per ln increase</b>
A. Primary model	1600	106	1.27 (1.05, 1.55)	1.47 (1.06, 2.04)
B. PFOA and PFOS in same model	1600	106	1.22 (0.99, 1.51)	1.34 (0.97, 1.87)
C. Limit to nulliparous prospective pregnancies <sup>b</sup>	308	22	1.33 (0.87, 2.03)	1.31 (0.72, 2.36)
D. Excluding diabetics	1535	95	1.36 (1.13, 1.64)	1.61 (1.14, 2.27)
E. For births in 2005, 2006, 2007	1045	64	1.35 (1.04, 1.76)	1.17 (0.77, 1.78)
F. Including term for birth year <sup>c</sup>	1600	106	1.27 (1.05, 1.53)	1.48 (1.07, 2.06)
G. Control for BMI using cubic term	1600	106	1.27 (1.05, 1.54)	1.42 (1.03, 1.96)
H. Nulliparous (first births)	556	50	1.26 (0.94, 1.69)	0.92 (0.64, 1.32)
I. Parous (second and higher order births)	1044	56	1.26 (0.98, 1.62)	2.23 (1.40, 3.54)

<sup>a</sup> unless otherwise specified, adjusted for maternal age (cubic terms), educational level (<12 years, 12, 13-15, 16+), smoking status (current, former, non), parity (0, 1+), BMI (underweight, normal, overweight, obese), self-reported diabetes, time between conception and serum measurement (year strata)

<sup>b</sup> conception occurred after serum measurement at enrollment

<sup>c</sup> including indicator terms for birth year instead of indicator terms for years since serum measurement

Supplemental Material Table S4. Adjusted<sup>a</sup> Associations from Sensitivity Analyses of Low Birth Weight (<2500 grams)

<b>Model Variant</b>	<b>N births</b>	<b>N cases</b>	<b>PFOA OR (95% CI) per ln increase</b>	<b>PFOS OR (95% CI) per ln increase</b>
A. Primary model	1629	88	0.94 (0.75, 1.17)	1.12 (0.75, 1.67)
B. PFOA and PFOS in same model	1629	88	0.91 (0.72, 1.16)	1.16 (0.75, 1.79)
C. Limit to nulliparous prospective pregnancies <sup>b</sup>	318	22	0.89 (0.51, 1.55)	0.65 (0.39, 1.07)
D. Excluding diabetics	1563	84	0.97 (0.77,1.22)	1.12 (0.74, 1.70)
E. For births in 2005, 2006, 2007	1063	64	0.91 (0.70, 1.17)	0.98 (0.64, 1.50)
F. Including term for birth year <sup>c</sup>	1629	88	0.93 (0.75, 1.16)	1.14 (0.77, 1.70)
G. Control for BMI using cubic term	1629	88	0.93 (0.75, 1.16)	1.11 (0.75, 1.65)
H. Nulliparous (first births)	570	41	0.92 (0.65, 1.31)	1.05 (0.61, 1.78)
I. Parous (second and higher order births)	1059	47	0.93 (0.71, 1.24)	1.20 (0.59, 2.45)

<sup>a</sup>unless otherwise specified, adjusted for maternal age (cubic terms), educational level (<12 years,12,13-15,16+), smoking status (current, former, non), parity (0,1+), BMI (underweight, normal, overweight, obese), self-reported diabetes, time between conception and serum measurement (year strata)

<sup>b</sup>conception occurred after serum measurement at enrollment

<sup>c</sup>including indicator terms for birth year instead of indicator terms for years since serum measurement

Supplemental Material Table S5. Adjusted<sup>a</sup> Associations from Sensitivity Analyses of Birth Weight in Full-Term Infants

<b>Model Variant</b>	<b>N births</b>	<b>PFOA Δ grams (95% CI) per ln increase</b>	<b>PFOS Δ grams (95% CI) per ln increase</b>
A. Primary model	1470	-8 (-28, 12)	-29 (-66, 7)
B. PFOA and PFOS in same model	1470	-4 (-25, 17)	-27 (-65, 10)
C. Limit to nulliparous prospective pregnancies <sup>b</sup>	284	-18 (-69, 32)	-55 (-123, 14)
D. Excluding diabetics	1420	-6 (-26, 15)	-25 (-61, 12)
E. For births in 2005, 2006, 2007	947	-10 (-34, 14)	-36 (-82, 9)
F. Including term for birth year <sup>c</sup>	1470	-7 (-27, 13)	-28 (-65, 8)
G. Control for BMI using cubic term	1470	-9 (-29, 11)	-30 (-67, 6)
H. Nulliparous (first births)	504	-4 (-42, 35)	-48 (-105, 9)
I. Parous (second and higher order births)	966	-3 (-25, 20)	-14 (-58, 29)

<sup>a</sup> unless otherwise specified, adjusted for maternal age (cubic terms), educational level (<12 years, 12, 13-15, 16+), smoking status (current, former, non), parity (0, 1+), BMI (underweight, normal, overweight, obese), self-reported diabetes, time between conception and serum measurement (year strata)

<sup>b</sup> conception occurred after serum measurement at enrollment

<sup>c</sup> including indicator terms for birth year instead of indicator terms for years since serum measurement