

Title: Patterns and Predictors of Environmental Chemical Mixture Exposure among Pregnant Women: The HOME Study

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Table S1. Characteristics of urinary or serum chemical concentrations among pregnant women from the HOME Study. ^{a,b,c,d,e}

Chemical	Sample Type ^e	% <LOD	Median	Min, Max	a-
Benzophenone-3 (ng/mL)	Average	0	27.3	0.3, 8006.9	Th
Triclosan (ng/mL)	Average	0	19.5	1.3, 1250.1	e
Bisphenol A (ng/mL)	Average	9.4	2.0	0.4, 48.9	par
∑Paraben (ng/mL)	Average	NA	311.0	7.2, 4217	abe
Mono-n-butyl-phthalate (MBP) (ng/mL)	Average	0.1	25.2	3.8, 277.4	n
Monobenzyl phthalate (MBzP) (ng/mL)	Average	1.3	9.0	0.2, 137.1	su
Mono(3-carboxypropyl) phthalate (MCP) (ng/mL)	Average	2.8	2.2	0.4, 38.9	m
Monoisobutyl-phthalate (MiBP) (ng/L)	Average	4.9	4.9	5.6, 5060.6	ma
Monoethyl phthalate (MEP) (ng/mL)	Average	0.0	131.4	0.7, 26.1	ry
∑DEHP (ng/mL)	Average	NA	76.8	15.4, 2859.7	var
Arsenic (ng/mL)	Single	NA	5.1	1.1, 29.4	iabl
Mercury (ng/mL)	Average	8.4	0.6	0.1, 7.5	e
Cadmium (ng/mL)	Single	36	0.2	0, 1.7	(∑
Lead (ug/dL)	Average	0.5	0.7	0.2, 2.2	par
∑DAP (ng/mL)	Average	NA	50.2	2.3, 1398.1	abe
3-Phenoxybenzoic Acid (ng/mL)	Average	3.9	0.3	0, 21.7	n)
p,p'-dichlorodiphenyldichloroethylene (DDE) (ng/g lipid)	Single	0	70.7	21.6, 2290	is
Hexachlorobenzene (HCB) (ng/g lipid)	Single	1.6	7.1	2, 39.2	the
Oxychlorane (ng/g lipid)	Single	5.3	5.1	1.2, 26.8	mo
trans-Nonachlor (ng/g lipid)	Single	1.3	7.4	1.5, 59.3	lar
∑ ₄ PCB(ng/g lipid)	Average	NA	30.3	5.3, 354.3	su
Polybrominated diphenyl ether (BDE-47) (ng/g lipid)	Average	0.3	18.5	1.5, 1290	m
Perfluorohexane sulfonate (PFHxS) (ng/mL)	Single	0.3	1.5	0.1, 32.5	of
Perfluorooctane sulfonate (PFOS) (ng/mL)	Single	0	14.0	0.4, 57.2	
Perfluorooctanoate (PFOA) (ng/mL)	Single	0	5.5	0.5, 26.4	
Perfluorononanoate (PFNA) (ng/mL)	Single	0	0.9	0.1, 2.9	
Cotinine (ng/mL)	Average	21	0.0	0, 388	

methylparaben, propylparaben, and butylparaben.

b- The di-(2-ethylhexyl) phthalate summary (Σ DEHP) variable is the molar sum of its urinary metabolites MEHP, MEHHP, MEOHP, and MECPP.

c- The organophosphate pesticides summary variable (Σ DAP) is the molar sum of DEDTP, DEP, DETP, DMDTP, DMP, and DMTP.

d- The polychlorinated biphenyls summary variable (Σ 4PCBs) is the sum of PCB 138/158, PCB 118, PCB 153, and PCB 180.

e- Average sample type indicates the mean of concentrations at 16 and 26 weeks of pregnancy.

Table S2: Rank ordering of geometric mean chemical concentrations according to k-means cluster: HOME Study pregnant women, 2003-2006. a,b,c,d

Chemical	Cluster 1	Cluster 2	Cluster 3
Benzophenone-3	High	Medium	Low
Triclosan	High	Medium	Low
Bisphenol A	High	Medium	Low
Σ Paraben	Low	Medium	High
Mono-n-butyl-phthalate (MBP)	High	Medium	Low
Monobenzyl phthalate (MBzP)	Low	High	Medium
Mono(3-carboxypropyl) phthalate (MCP)	High	Low	Medium
Monoisobutyl-phthalate (MiBP)	Low	High	Medium
Monoethyl phthalate (MEP)	Low	Medium	High
Σ DEHP	High	Medium	Low
Arsenic	High	Medium	Low
Mercury	High	Medium	Low
Cadmium	High	Medium	Low
Lead	Low	Medium	High
Σ DAP	High	Medium	Low
3-Phenoxybenzoic Acid	High	Medium	Low
p,p'-dichlorodiphenyldichloroethylene (DDE)	High	Medium	Low
Hexachlorobenzene	High	Medium	Low
Oxychlorane	High	Medium	Low
trans-Nonachlor	High	Medium	Low
Σ 4PCB	High	Medium	Low
Polybrominated diphenyl ether (BDE-47)	Low	Medium	High
Perfluorohexane sulfonate (PFHxS)	High	Low	Medium
Perfluorooctane sulfonate (PFOS)	High	Medium	Low
Perfluorooctanoate (PFOA)	High	Medium	Low
Perfluorononanoate (PFNA)	Low	Medium	High
Cotinine	Low	Medium	High

a- The paraben summary variable (Σ paraben) is the molar sum of methylparaben, propylparaben, and butylparaben.

b- The di-(2-ethylhexyl) phthalate summary (Σ DEHP) variable is the molar sum of its urinary metabolites MEHP, MEHHP, MEOHP, and MECPP.

c- The organophosphate pesticides summary variable (Σ DAP) is the molar sum of DEDTP, DEP, DETP, DMDTP, DMP, and DMTP.

d- The polychlorinated biphenyls summary variable (Σ 4PCBs) is the sum of PCB 138/158, PCB 118, PCB 153, and PCB 180.

Table S3: Geometric mean of chemical concentrations per cluster. ^{a,b,c,d}

Chemical	Cluster 1	Cluster 2	Cluster 3
Benzophenone-3	49.0	28.9	27.4
Triclosan	31.2	19.3	18.1
Bisphenol A	2.2	2.1	2.0
Σ Paraben	237.9	271.9	288.6
Mono-n-butyl-phthalate (MBP)	26.1	26.0	24.8
Monobenzyl phthalate (MBzP)	8.5	10.1	9.9
Mono(3-carboxypropyl) phthalate (MCP)	2.3	2.2	2.3
Monoisobutyl-phthalate (MiBP)	132.3	146.1	140.1
Monoethyl phthalate (MEP)	4.0	4.2	6.3
Σ DEHP	96.1	89.3	88.6
Σ Arsenic	8.5	6.9	5.8
Mercury	0.8	0.5	0.5
Cadmium	0.3	0.2	0.1
Lead	0.7	0.7	0.7
Σ DAP	62.9	49.8	39.3
3-Phenoxybenzoic Acid	0.4	0.4	0.4
p,p'-dichlorodiphenyldichloroethylene (DDE)	93.1	73.1	68.7
Hexachlorobenzene	7.4	7.3	7.0
Oxychlorane	5.7	5.2	4.8
trans-Nonachlor	8.6	7.7	7.5
Σ_4 PCB	37.0	29.5	27.9
Polybrominated diphenyl ether (BDE-47)	17.5	20.1	22.7
Perfluorohexane sulfonate (PFHxS)	1.8	1.4	1.5
Perfluorooctane sulfonate (PFOS)	14.7	13.3	12.7
Perfluorooctanoate (PFOA)	5.7	5.6	5.3
Perfluorononanoate (PFNA)	0.8	0.9	1.0
Cotinine	0.0	0.1	0.1

a- The paraben summary variable (Σ paraben) is the molar sum of methylparaben, propylparaben, and butylparaben.

b- The di-(2-ethylhexyl) phthalate summary (Σ DEHP) variable is the molar sum of its urinary metabolites MEHP, MEHHP, MEOHP, and MECPP.

c- The organophosphate pesticides summary variable (Σ DAP) is the molar sum of DEDTP, DEP, DETP, DMDTP, DMP, and DMTP.

d- The polychlorinated biphenyls summary variable (Σ_4 PCBs) is the sum of PCB 138/158, PCB 118, PCB 153, and PCB 180.

Table S4. Loading factors from principal component analysis explaining chemical biomarker concentrations when constrained to 6 principal components (PC) among pregnant women in the

Chemical	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Benzophenone-3	0.27	-0.12	-0.25	0.07	-0.06	0.07
Triclosan	0.20	-0.13	-0.20	0.09	-0.06	0.11
Bisphenol A	0.03	0.13	-0.07	0.18	0.04	0.35
Σ Paraben	0.16	0.07	-0.11	0.11	0.43	0.11
Mono-n-butyl-phthalate (MBP)	0.05	0.37	-0.04	0.28	-0.11	-0.19
Monobenzyl phthalate (MBzP)	-0.12	0.34	0.03	0.22	-0.12	-0.03
Mono(3-carboxypropyl) phthalate (MCP)	0.12	0.26	-0.14	0.25	-0.32	-0.09
Monoisobutyl-phthalate (MiBP)	-0.04	0.30	0.02	0.29	0.01	-0.25
Monoethyl phthalate (MEP)	0.03	0.17	-0.03	0.23	0.44	0.24
Σ DEHP	0.12	0.18	-0.14	0.11	-0.36	0.09
Arsenic	0.27	-0.12	-0.24	0.21	0.13	0.00
Mercury	0.17	0.00	0.04	0.10	0.35	-0.20
Cadmium	0.15	-0.14	-0.07	0.18	0.16	0.23
Lead	-0.05	0.09	0.36	0.02	0.22	-0.18
Σ DAP	0.17	-0.13	-0.17	0.10	0.14	-0.37
3-Phenoxybenzoic Acid	0.11	0.19	0.00	0.15	0.04	0.00
p,p'-dichlorodipenyldichloroethylene (DDE)	0.22	-0.07	0.37	0.09	-0.04	-0.23
Hexachlorobenzene	0.27	-0.04	0.34	0.03	-0.01	-0.09
Oxychlorane	0.34	-0.05	0.27	0.02	-0.18	0.24
trans-Nonachlor	0.30	-0.01	0.23	0.00	-0.17	0.30
Σ 4PCB	0.32	-0.09	0.30	0.07	-0.03	-0.11
Polybrominated diphenyl ether (BDE-47)	-0.12	0.20	0.20	0.01	-0.02	0.28
Perfluorohexane sulfonate (PFHxS)	0.22	0.21	-0.14	-0.30	0.01	0.08
Perfluorooctane sulfonate (PFOS)	0.24	0.29	-0.08	-0.36	0.05	-0.03
Perfluorooctanoate (PFOA)	0.17	0.29	-0.06	-0.35	0.13	0.08
Perfluorononanoate (PFNA)	0.15	0.30	-0.02	-0.34	0.09	-0.19
Benzophenone-3	-0.20	0.18	0.29	0.08	0.17	0.26

HOME Study. ^{a,b,c,d}

a- The paraben summary variable (Σ paraben) is the molar sum of methylparaben, propylparaben, and butylparaben.

b- The di-(2-ethylhexyl) phthalate summary (Σ DEHP) variable is the molar sum of its urinary metabolites MEHP, MEHHP, MEOHP, and MECPP.

c- The organophosphate pesticides summary variable (Σ DAP) is the molar sum of DEDTP, DEP, DETP, DMDTP, DMP, and DMTP.

d- The polychlorinated biphenyls summary variable (Σ 4PCBs) is the sum of PCB 138/158, PCB 118, PCB 153, and PCB 180.

Table S5. Principal component explaining the most variation in each chemical: HOME Study pregnant women, 2003-2006 a

PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Benzophenone-3	MBP	Lead		Σ Paraben	BPA
Triclosan	MBzP	DDE		MEP	Cd
Σ Arsenic	MCPP	HCB		Mercury	BDE-47
Σ DAP	MiBP	Cotinine			
Oxychlorane	Σ DEHP				
trans-Nonachlor	3-Phenoxybenzoic Acid				
Σ 4PCB	PFOS				
	PFOA				
	PFNA				
	PFHxS				

a- PC1 explain

ed most of the variance in benzophenone-3, triclosan, Σ As, Σ DAPs, oxychlorane, trans-nonachlor, and Σ 4PCBs. Thus, we characterized PC1 as being indicative of exposure to organochlorine compounds, phenols, Σ DAPs, and As.

Table S6. Unadjusted odds of cluster membership among pregnant women according to sociodemographic, behavioral, lifestyle, and

Variable	Cluster 1 OR (95% CI)	Cluster 2 OR (95% CI)
Maternal Race- Black vs. White	0.47 (0.25, 0.85)	0.81 (0.49, 1.34)
Maternal Race- Other vs. White	1.34 (0.51, 3.52)	0.65 (0.23, 1.88)
Marital Status- Not Married vs. Married	0.60 (0.35, 1.04)	0.73 (0.45, 1.19)
Income	1.19 (0.92, 1.55)	1.03 (0.81, 1.31)
Maternal Education Status- High School or less vs. Greater than High School	0.74 (0.39, 1.40)	1.25 (0.73, 2.15)
Maternal Age at Delivery	1.14 (0.87, 1.48)	1.16 (0.91, 1.47)
Maternal BMI	0.85 (0.65, 1.12)	1.04 (0.83, 1.31)
Parity- Nulliparous vs. Multiparous	1.07 (0.64, 1.80)	0.84 (0.52, 1.36)
Fish Consumption- None vs. Any	0.71 (0.35, 1.48)	0.75 (0.39, 1.44)
Fruit and Veg Consumption- Daily vs. Less than Daily	2.31 (1.35, 3.95)	1.24 (0.75, 2.04)

perinatal variables among pregnant women in the HOME Study (N=380). ^{a,b}

a- Cluster 1, 2, and 3 sample sizes were 105, 151, and 124.

b- Odds ratios for maternal age (SD: 5.8 years), household income (SD:\$ 42238), and maternal BMI (SD: 6.8 kg/m²) have been scaled so that the adjusted OR is per standard deviation change in those variables.