

Supplemental Tables

Table S1. Model parameter estimates relating MDF and **birth weight** (centered and scaled) using mixtures of 11 EDCs (MEP, MBP, MBzP, DEHP, DINP, BPA, triclosan, PFOA, PFOS, PCBs, and DDT&DDE; N=1,323) where the join points are based on published BE values or otherwise HBM values (Table 1).

Parameter	Regression Coefficient Estimate	Standard Error	P value
MDF	0.28	0.06	<0.001
Sex (centered)	0.11	0.02	<0.001
Creatinine (centered and scaled)	-0.03	0.02	0.227
Maternal education (centered)	0.03	0.02	0.247
Maternal weight (centered and scaled)	0.20	0.02	<0.001
Maternal smoking (centered)	-0.01	0.03	0.735
Gestational week at birth (centered)	0.30	0.01	<0.001
Parity (centered and scaled)	0.17	0.03	<0.001
Maternal age (centered and scaled)	0.003	0.03	0.922
Fish intake (centered and scaled)	-0.02	0.02	0.383

Table S2. Model parameter estimates relating MDF and **language delay** using mixtures of 11 EDCs (MEP, MBP, MBzP, DEHP, DINP, BPA, triclosan, PFOA, PFOS, PCBs, and DDT&DDE; N=840) where the join points are based on published BE values or otherwise HBM values (Table 1).

Parameter	Regression Coefficient Estimate	Standard Error	P value
MDF	-650	476	0.172
Sex (centered)	0.51	0.13	<0.001
Creatinine (centered and scaled)	-0.10	0.13	0.465
Maternal education (centered)	-0.29	0.12	0.019
Maternal weight (centered and scaled)	0.13	0.12	0.275
Maternal smoking (centered)	-0.08	0.20	0.701
Gestational week at birth (centered)	-0.05	0.06	0.346

For comparison to the piecewise exponential nonlinear ACR model in equation (1), we have conducted similar analyses using a piecewise nonlinear logistic ACR model (See section 3.2 and Table S3). Distinctions between the two models include the following.

In the analysis of birth weight:

- The DF for PCBs was significant in the exponential piecewise model (Table 1, $p=0.022$); in the logistic piecewise model $p=0.223$.
- The DF for DDT+DDE changes from significant ($p=0.002$; Table 1) to borderline significant ($p=0.069$; Table S3).
- In Table S3, the upper bound for the join point for PCBs exceeds the maximum observed data range.

In the analysis of language delay:

- The average join point estimate for MEP was an order of magnitude higher in Table 1.
- The average join point estimate for triclosan was 3 orders of magnitude higher in Table 1.

Table S3. Estimated single analyte and mixture estimates using desirability functions (DF: based on B=100 bootstrap samples for single chemicals and B=1000 for the mixture analyses) for **reduced birth weight** (N=1323) and **language delay** (N=840) using the piecewise **nonlinear logistic function**. The p-values are associated with the test for significance of the DF (for single chemicals) or MDF (for mixtures) in generalized linear models (GLM). The interval given in the single analyte analyses is the 5th and 95th percentiles from the bootstrap distribution of the δ_m values. Generally, the more desirable the concentration/mixture the higher the birth weight (positive regression coefficient) and a decrease in the risk of language delay (negative regression coefficient)

(ug/L)	Analysis of birth weight			Analysis of language delay		
Analyte	δ_m estimates and 90% Bootstrap CI from Single chemical analyses	p value for single analyte DF in GLM	δ_m estimates in Mixture analysis (MDF, in GLM p<0.001)	δ_m estimates and 90% CI from Single chemical analyses	p value for single analyte DF in GLM	δ_m estimates in Mixture analysis (MDF, in GLM p=0.003)
MEP (urinary)	184 (9, 1029)	0.901 ^f	205 (38, 1122)	148 (19, 4368)	0.458 ^c	9 (0.1, 67)
MBP (urinary)	124 (48, 648)	0.495	171 (49, 478)	139 (30, 1225)	0.157 ^c	57 (8, 351)
MBzP (urinary)	45 (8, 314)	0.526	26 (6, 127)	30 (2, 837)	0.126 ^c	8 (0.1, 63)
DEHP ^a (urinary)	97 (2, 941)	0.634 ^c	138 (44, 368)	209 (55, 505)	0.266	1009 (615, 1956)
DINP (urinary)	265 (54, 1712)	0.344 ^c	140 (21, 380)	54 (0.2, 1711)	0.576 ^c	122 (29, 1337)
BPA (urinary)	6.4 (2, 36)	0.836 ^c	5.0 (2, 17)	2.4 (0.6, 23)	0.634 ^c	9 (6, 15)
Triclosan (urinary)	56 (0.1, 2556)	0.861	9 (0.01, 219)	196 (3, 5456)	0.595	0.01 (.0.005, 0.02)
BPFOA (plasma)	1.6 (1.3, 2.3)	<0.001	1.9 (1.3, 8.9)	0.08 (0.06, 0.14)	0.570 ^c	13 (9.3, 23)
PFOS (plasma)	5.9 (3.2, 10.2)	0.024	8.7 (4.1, 18)	0.52 (0.30, 8.5)	0.543 ^c	21 (16, 34)
PCBs ^b (serum)	0.47 (0.27, 1.8)	0.223	0.55 (0.42, 0.79)	0.22 (0.01, 1.8)	0.125 ^c	0.89 (0.60, 1.3)
DDT+DDE (serum)	0.25 (0.06, 0.81)	0.069	0.61 (0.42, 1.0)	0.50 (0.01, 3.3)	0.102 ^c	0.26 (0.009, 1.6)

a Sum of DEHP metabolites: 5 oxo- and 5 OH-MEHP in urine.

b Sum of PCB138, PCB153, PCB180 in serum.

c p values associated with negative regression coefficients; otherwise, the regression coefficient is positive