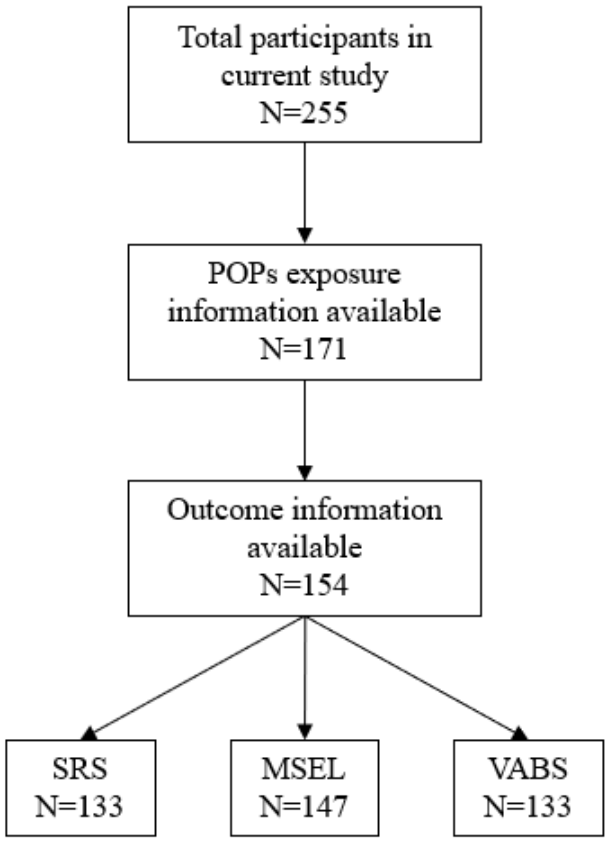

Figure S1. Flowchart of the study population. SRS; Social Responsiveness Scale; MSEL: Mullen Scales of Early Learning; VABS: Vineland Adaptive Behavior Scales.

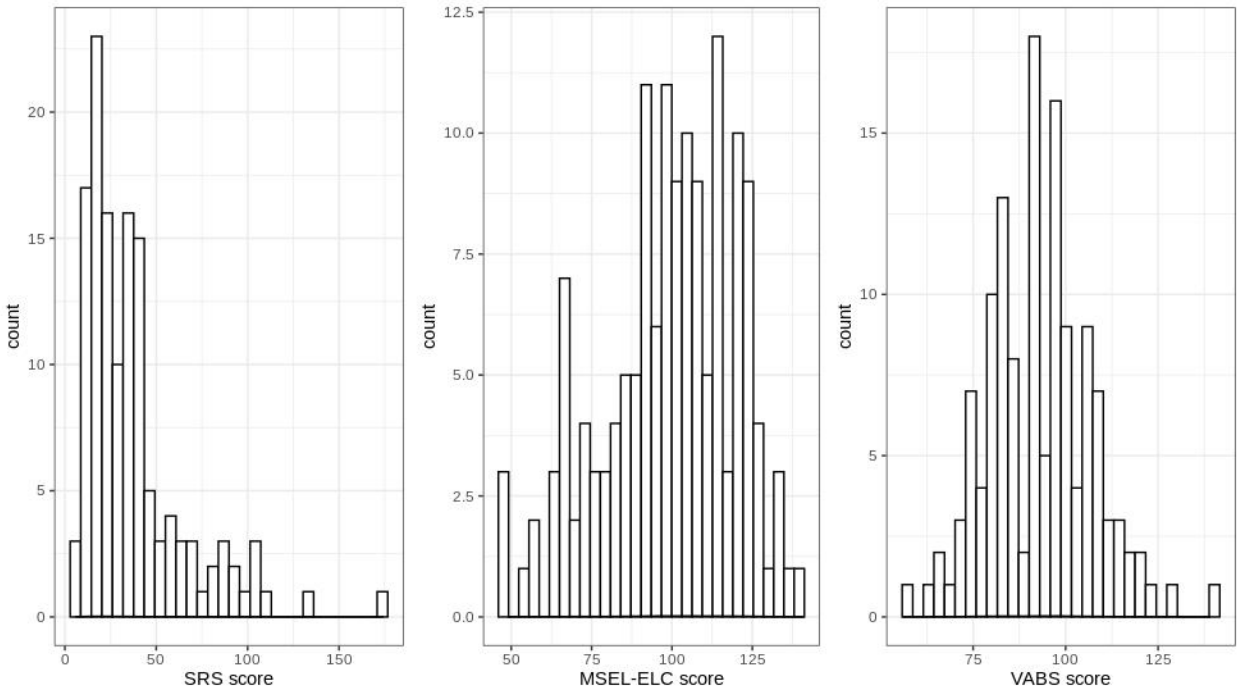

Figure S2. Distribution of ASD-related outcomes in EARLI. The total sample size for the outcomes: n=133 for SRS, n=147 for MSEL, n=133 for VABS. SRS, Social Responsiveness Scale; MSEL, Mullen Scales of Early Learning; MSEL-ELC, Mullen Scales of Early Learning early learning composite; VABS, Vineland Adaptive Behavior Rating Scales.

Table S1. Description of POPs included in the analysis

Abbreviation	IUPAC name
PCB28	2,4,4'-triCB
PCB74	2,4,4',5-tetraCB
PCB99	2,2',4,4',5-pentaCB
PCB118	2,3',4,4',5-pentaCB
PCB153	2,2',4,4',5,5'-hexaCB
PCB138/158	2,2',3,4,4',5'-hexaCB and 2,3,3',4,4',6-hexaCB
PCB170	2,2',3,3',4,4',5-heptaCB
PCB180	2,2',3,4,4',5,5'-heptaCB
PCB187	2,2',3,4',5,5',6-heptaCB
PCB196/203	2,2',3,3',4,4',5',6-octaCB and 2,2',3,4,4',5,5',6-octaCB
PBDE47	2,2',4,4'-tetrabromodiphenyl ether
PBDE99	2,2',3,3',4-pentabromodiphenyl ether
PBDE100	2,2',4,4',6-pentabromodiphenyl ether
PBDE153	2,2',4,4',5,5'-hexabromodiphenyl ether
HCB	Hexachlorobenzene
p,p'-DDE	2,2-Bis(4-chlorophenyl)-1,1-dichloroethene

Table S2. Posterior inclusion probabilities for group inclusion and conditional inclusion from BKMR model results

		SRS		MSEL		VABS	
POPs	Group	groupPIP	condPIP	groupPIP	condPIP	groupPIP	condPIP
PCB28	PCBs	0.43	0.08	0.63	0.03	0.62	0.03
PCB74	PCBs	0.43	0.06	0.63	0.03	0.62	0.03
PCB99	PCBs	0.43	0.05	0.63	0.02	0.62	0.05
PCB118	PCBs	0.43	0.05	0.63	0.04	0.62	0.04
PCB153	PCBs	0.43	0.12	0.63	0.09	0.62	0.11
PCB138/158	PCBs	0.43	0.07	0.63	0.05	0.62	0.08
PCB170	PCBs	0.43	0.07	0.63	0.24	0.62	0.16
PCB180	PCBs	0.43	0.27	0.63	0.26	0.62	0.18
PCB187	PCBs	0.43	0.15	0.63	0.14	0.62	0.16
PCB196/203	PCBs	0.43	0.07	0.63	0.10	0.62	0.16
PBDE47	PBDEs	0.58	0.41	0.71	0.30	0.41	0.29
PBDE99	PBDEs	0.58	0.30	0.71	0.49	0.41	0.27
PBDE100	PBDEs	0.58	0.24	0.71	0.16	0.41	0.21
PBDE153	PBDEs	0.58	0.06	0.71	0.05	0.41	0.23
HCB	Pesticides	0.41	0.17	0.41	0.57	0.49	0.29
p,p'-DDE	Pesticides	0.41	0.83	0.41	0.43	0.49	0.71

Models adjusted for study site, child's sex, maternal education, maternal race/ethnicity, and maternal pre-pregnancy BMI. Note: PCB, polychlorinated biphenyl; PBDE, polybrominated diphenyl ethers; HCB, hexachlorobenzene; *p,p´*-,DDE, *p,p´*-dichlorodiphenyldichloroethen, SRS, Social Responsiveness Scale; MSEL-ELC, Mullen Scales of Early Learning early learning composite; VABS, Vineland Adaptive Behavior Rating Scales; BMI, body mass index.

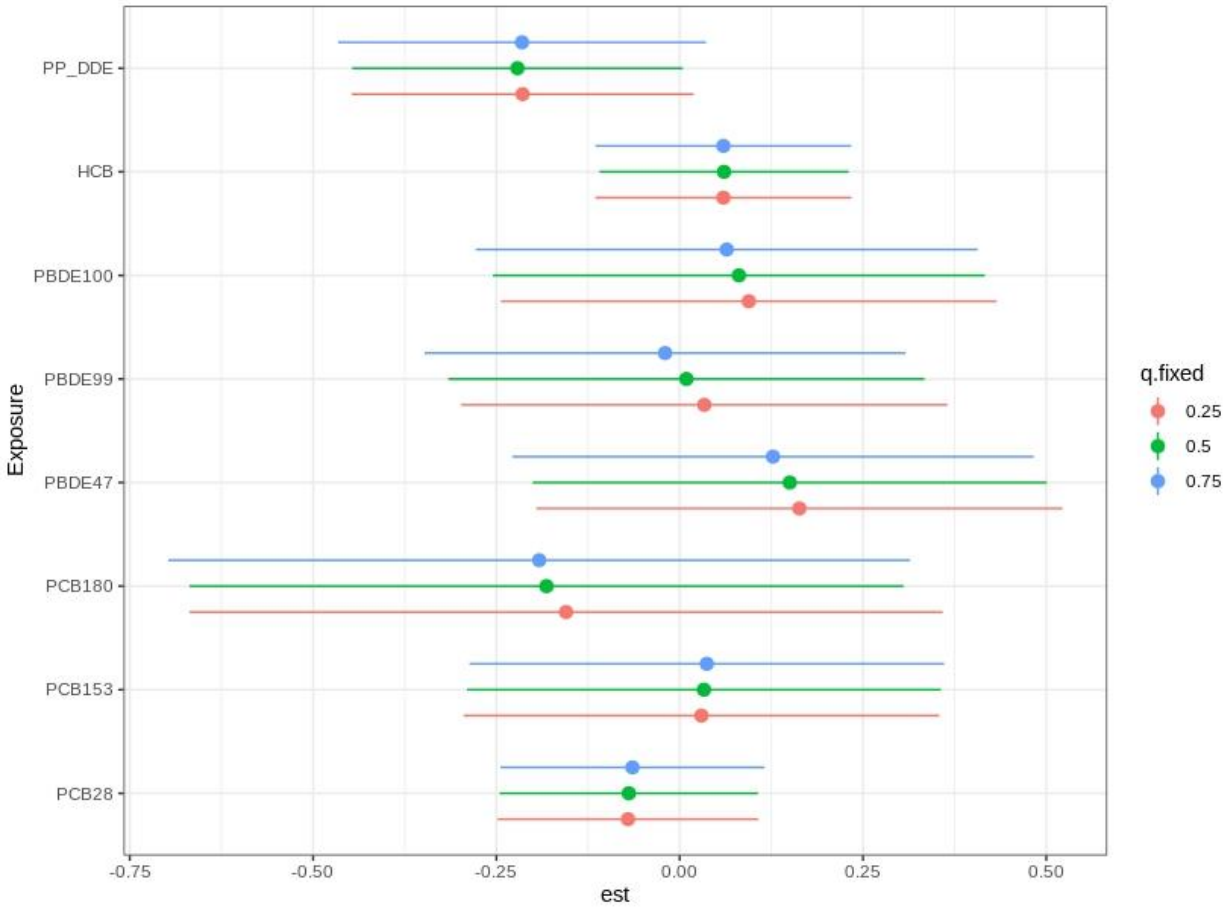

Figure S3. The single-exposure effects of each individual POPs congeners on SRS score (with corresponding 95% confidence intervals) are shown when an individual POP exposure was at its 75th percentile as compared to its 25th percentile, when all of the other POPs were fixed at a specific exposure percentile (25th, 50th, or 75th, respectively). Only POPs that were associated with SRS score from previous univariate exposure-response results were included in this analysis. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

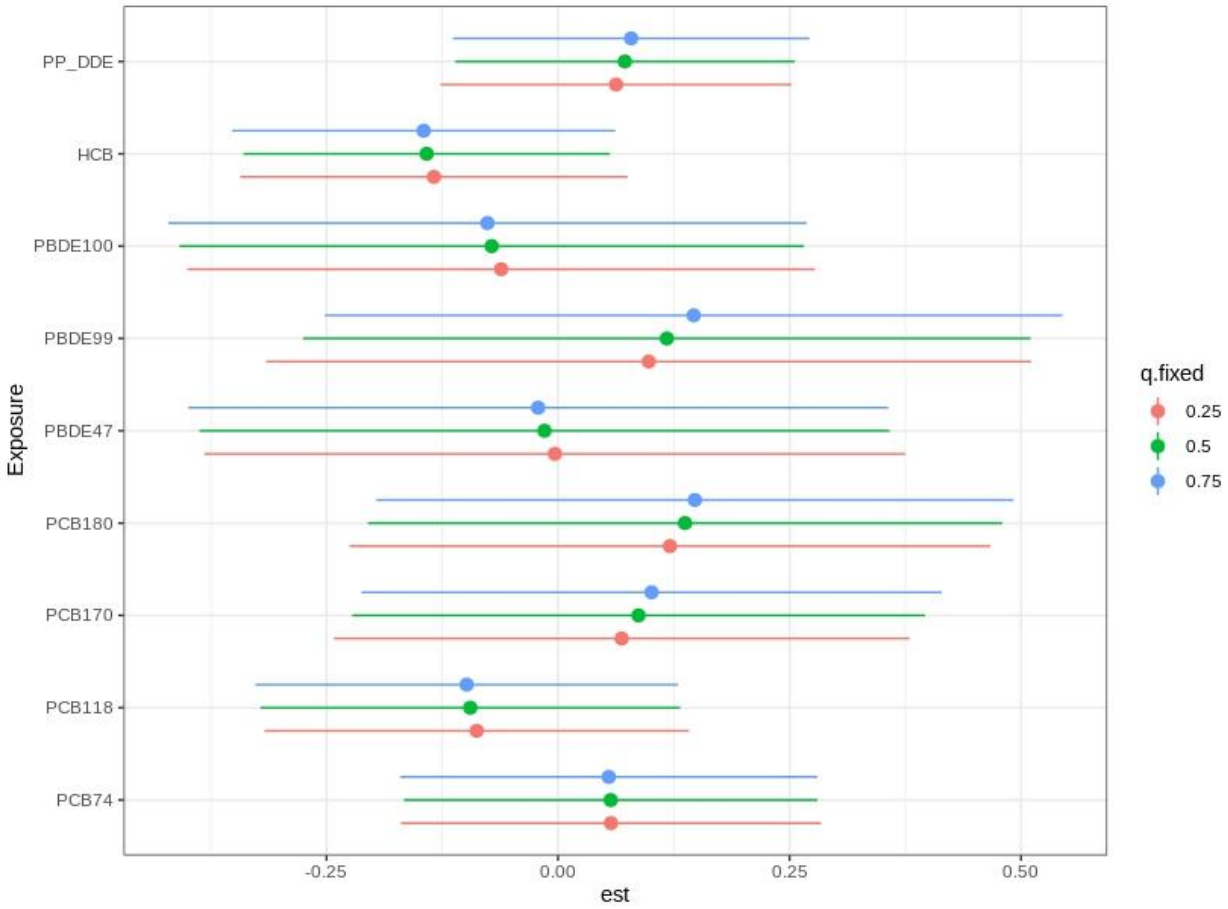

Figure S4. The single-exposure effects of each individual POPs congeners on MSEL-ELC score (with corresponding 95% confidence intervals) are shown when an individual POP exposure was at its 75th percentile as compared to its 25th percentile, when all of the other POPs were fixed at a specific exposure percentile (25th, 50th, or 75th, respectively). Only POPs that were associated with MSEL score from previous univariate exposure-response results were included in this analysis. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

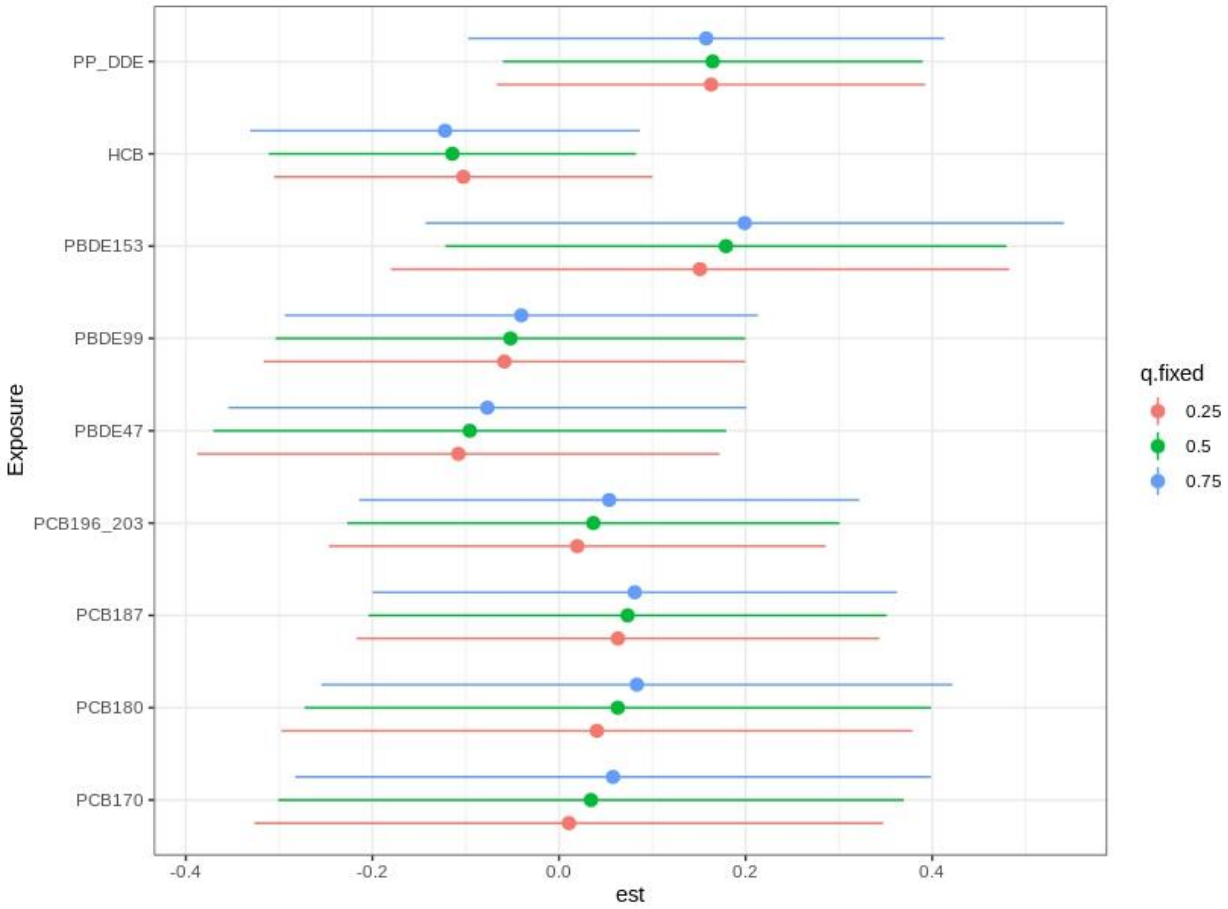

Figure S5. The single-exposure effects of each individual POPs congeners on VABS score (with corresponding 95% confidence intervals) are shown when an individual POP exposure was at its 75th percentile as compared to its 25th percentile, when all of the other POPs were fixed at a specific exposure percentile (25th, 50th, or 75th, respectively). Only POPs that were associated with VABS score from previous univariate exposure-response results were included in this analysis. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

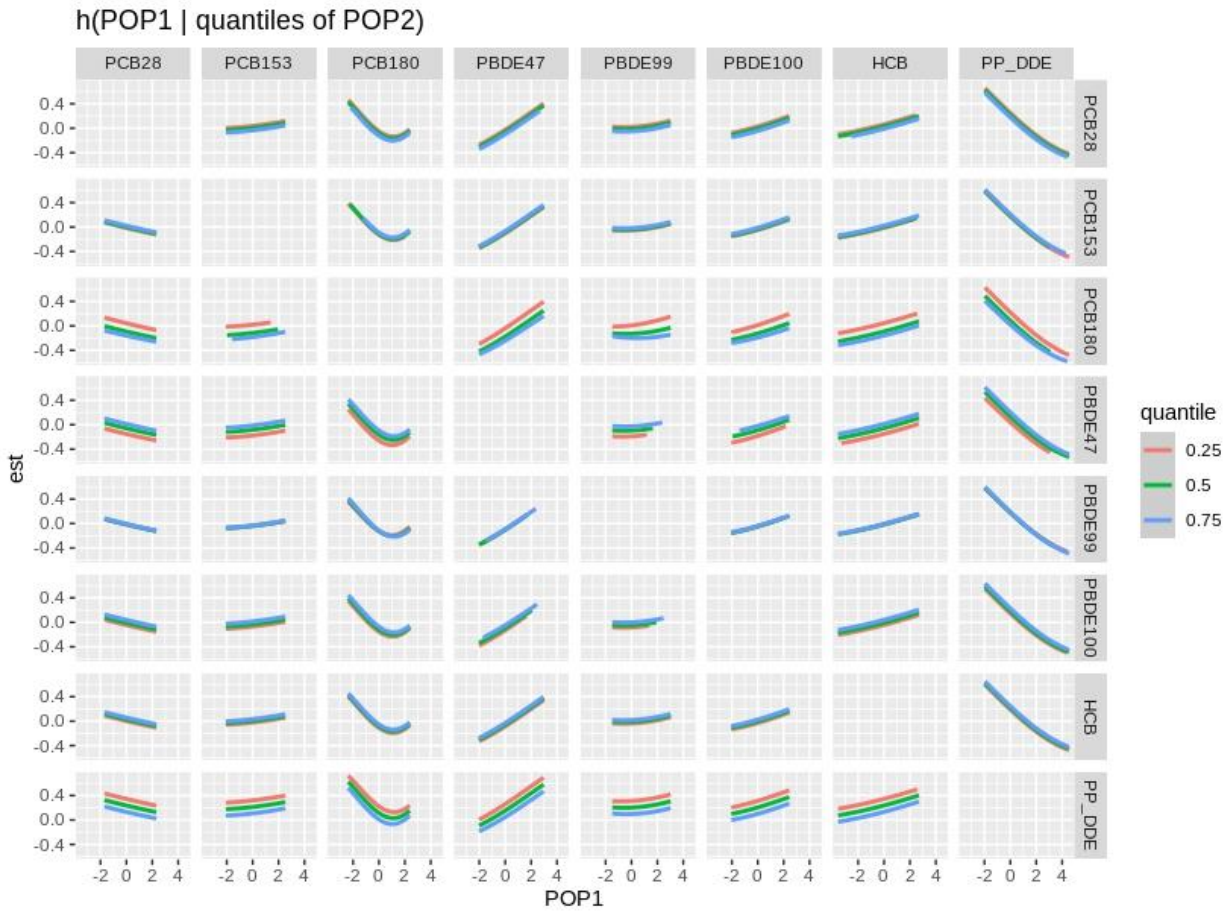

Figure S6. Bivariate exposure-response functions for SRS score using BKMR. Associations between each POP (column, POP1) and SRS, setting a second POP (row, POP2) to its 25th, 50th, and 75th percentile and all other POPs to their median. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

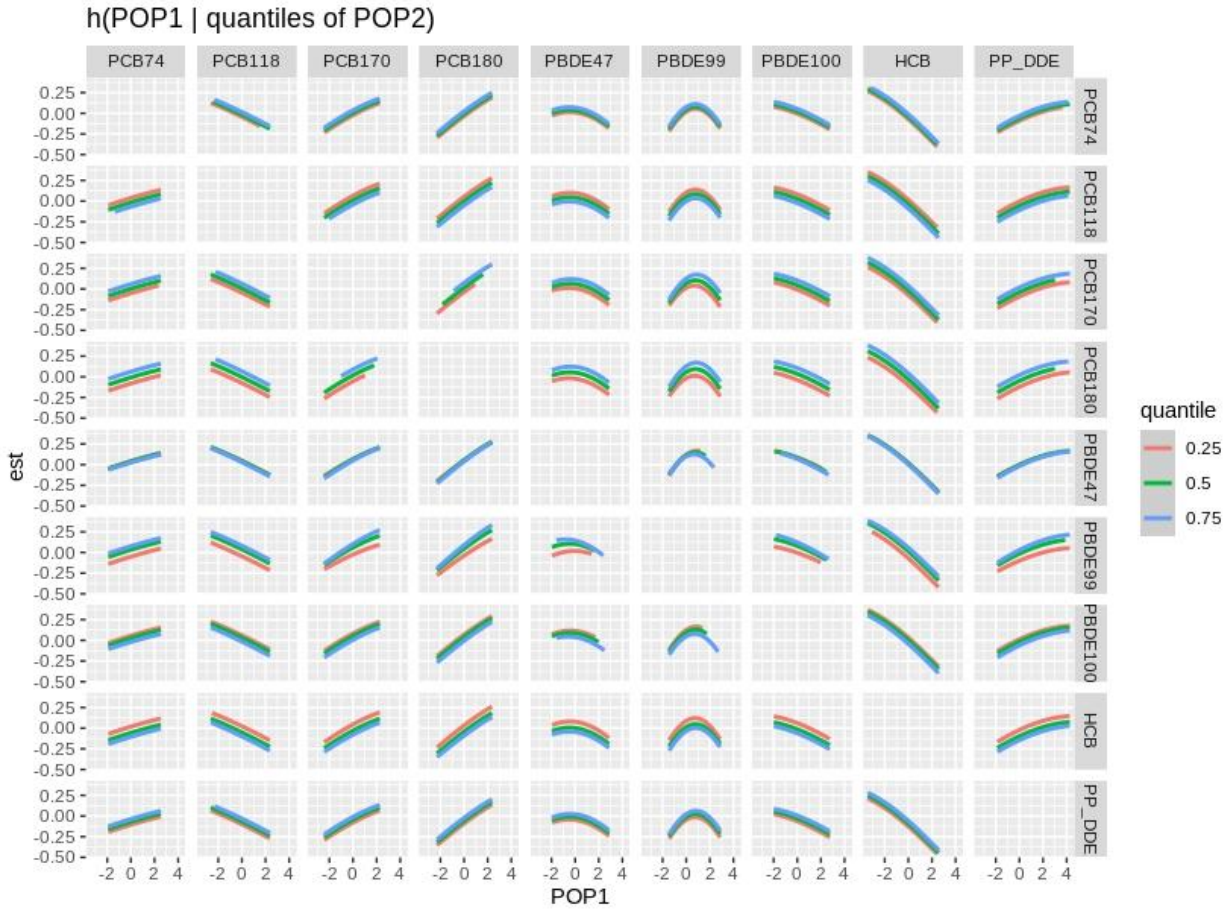

Figure S7. Bivariate exposure-response functions for MSEL-ELC score using BKMR. Associations between each POP (column, POP1) and MSEL-ELC, setting a second POP (row, POP2) to its 25th, 50th, and 75th percentile and all other POPs to their median. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

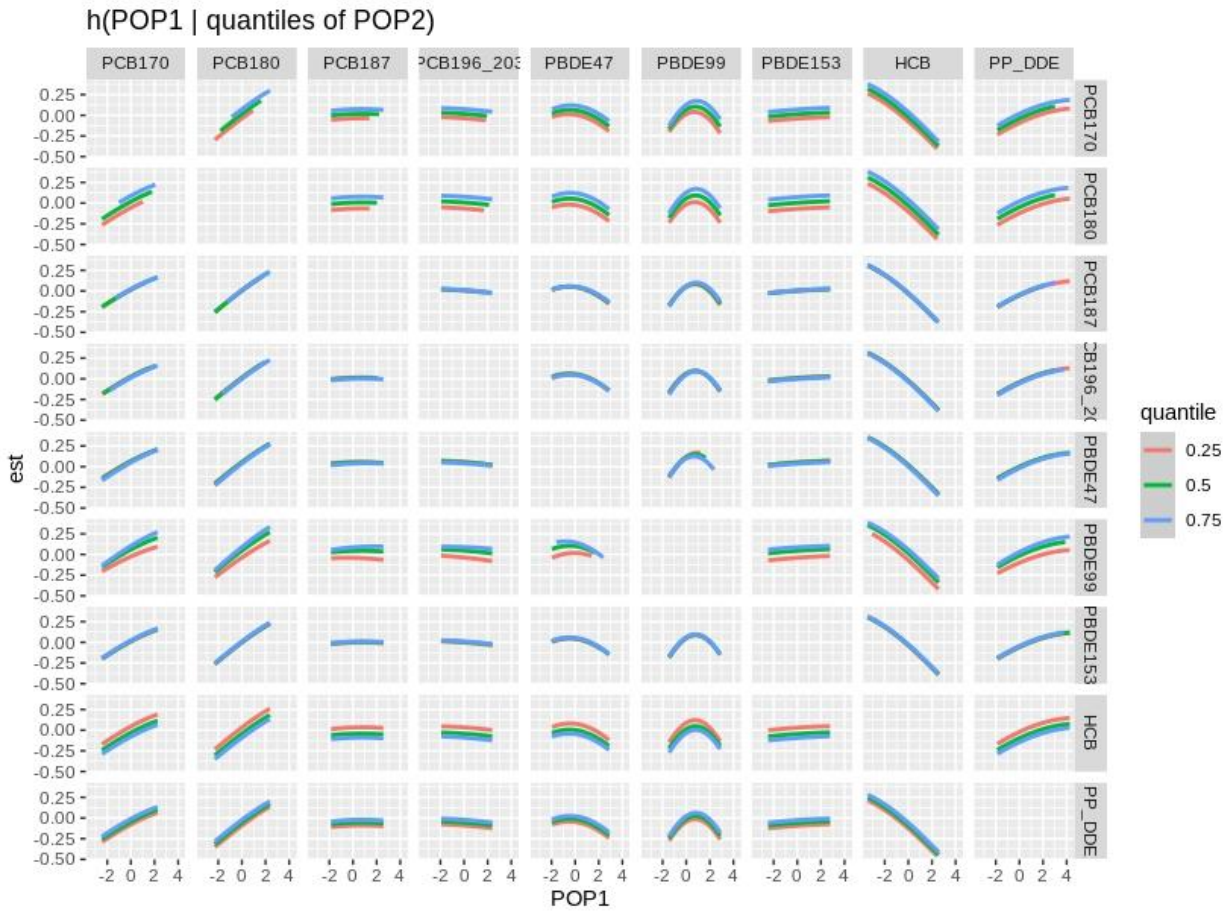

Figure S8. Bivariate exposure-response functions for VABS score using BKMR. Associations between each POP (column, POP1) and VABS, setting a second POP (row, POP2) to its 25th, 50th, and 75th percentile and all other POPs to their median. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

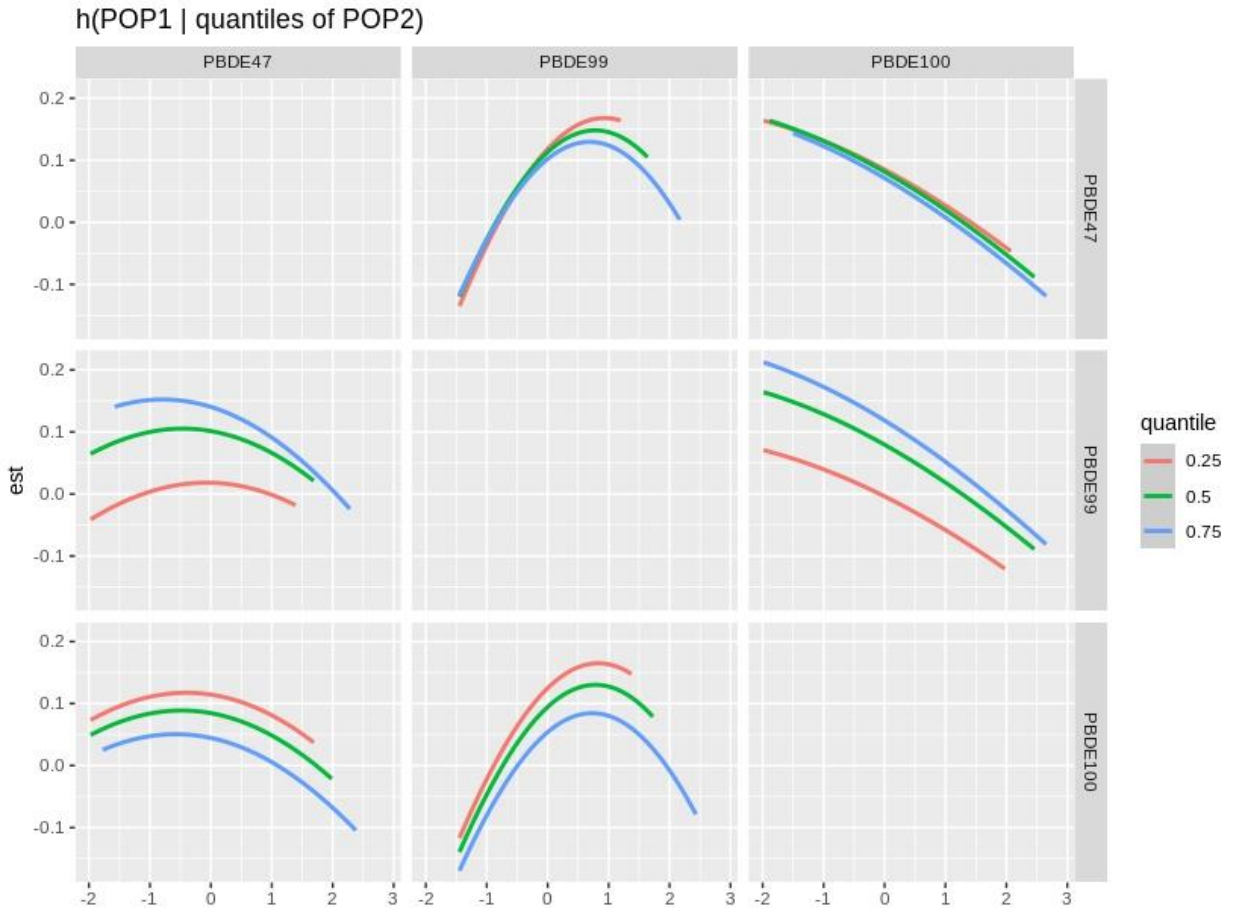

Figure S9. Bivariate exposure-response functions for PBDE47, PBDE99, and PBDE100 with MSEL-ELC score using BKMR. Associations between each PBDE (column, POP1) and MSEL-ELC, setting a second PBDE (row, POP2) to its 25th, 50th, and 75th percentile and all other POPs to their median. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI. POPs were scaled in the BKMR models

Table S3. Association between POPs mixture and quantitative traits in quantile g-computation models by each POP class

	β (95% CI)	p-value
SRS score		
PCBs	-6.10 (-14.68, 2.47)	0.17
PBDEs	1.95 (-4.13, 8.02)	0.53
Pesticides	2.15 (-2.66, 6.95)	0.38
MSEL-ELC score		
PCBs	6.53 (-0.67, 13.73)	0.08
PBDEs	1.35 (2.18, 5.63)	0.54
Pesticides	0.89 (-2.22, 3.99)	0.58
VABS score		
PCBs	-5.10 (-11.08, 0.88)	0.10
PBDEs	-0.76 (-4.31, 2.78)	0.67
Pesticides	0.94 (-1.52, 3.40)	0.45

Estimated beta represents differences in quantitative traits per one-quantile increase in each mixture groups: PCBs, PBDEs, persistent pesticides. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI

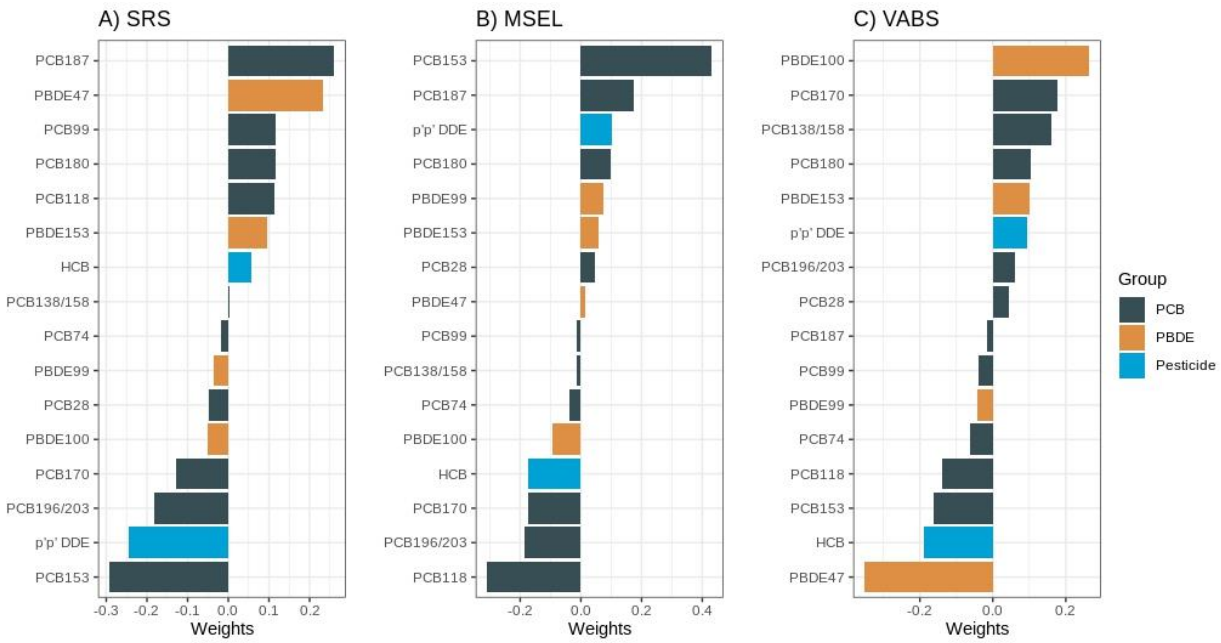

Figure S10. Weights of each POP from quantile g-computation model results for A) SRS score, B) MSEL Score, and C) VABS score. Weights represent the proportion of the positive or negative partial effect for each component in the mixture on the quantitative traits. Models adjusted for study site, child's sex, maternal education, maternal race, and maternal pre-pregnancy BMI