Supplementary eTable 1: Spearman correlation matrix for persistent organic pollutant exposure concentrations, CHAMACOS Study, Salinas, CA, 2009-2011

	DDT	DDE	HCB	β-HCH	NONA	BDE47	BDE99	BDE100	BDE153	PCB28	PCB74	PCB99	PCB118	PCB138	PCB153	PCB170
DDT	1															
DDE	0.797	1														
HCB	0.290	0.404	1													
β-HCH	0.273	0.313	0.403	1												
NONA	0.354	0.464	0.573	0.497	1											
BDE47	0.097	0.050	-0.043	-0.057	-0.020	1										
BDE99	0.106	0.058	-0.067	-0.073	-0.041	0.936	1									
BDE100	0.098	0.079	-0.014	-0.057	0.009	0.920	0.890	1								
BDE153	-0.096	0.012	0.094	-0.091	0.123	0.530	0.535	0.710	1							
PCB28	0.036	0.057	0.158	0.005	-0.007	0.015	0.003	0.012	0.006	1						
PCB74	0.184	0.344	0.551	0.361	0.611	-0.009	-0.025	0.041	0.172	0.044	1					
PCB99	0.255	0.369	0.529	0.258	0.503	0.063	0.014	0.107	0.148	0.446	0.628	1				
PCB118	0.303	0.464	0.543	0.349	0.677	0.027	-0.004	0.106	0.241	-0.001	0.789	0.718	1			
PCB138	0.224	0.437	0.566	0.355	0.662	0.050	0.011	0.117	0.256	0.008	0.726	0.713	0.888	1		
PCB153	0.197	0.428	0.576	0.352	0.672	0.027	-0.002	0.091	0.266	-0.003	0.747	0.698	0.871	0.949	1	
PCB170	0.149	0.361	0.519	0.286	0.618	-0.005	-0.023	0.048	0.241	-0.023	0.695	0.600	0.781	0.879	0.933	1
PCB180	0.131	0.359	0.542	0.262	0.613	0.015	-0.009	0.072	0.278	0.003	0.689	0.613	0.775	0.881	0.948	0.968

Supplementary eTable 2: Results longitudinal (GEE) and cross-sectional models[a] for a) Body mass index, b) Waist circumference, c) Body fat percent, and d) Obese status by continuous (log_{10}) persistent organic pollutant exposure concentrations, CHAMACOS Study, Salinas, CA, 2009-2014.

a) Body mass index

Exposure	GEE (N=467, obs=1,271) Adjusted-β (95% CI)	Visit 1 (N = 456) Adjusted-β (95% CI)	Visit 2 (N = 409) Adjusted-β (95% CI)	Visit 3 (N = 406) Adjusted-β (95% CI)
p,p'-DDT	1.75 (0.64, 2.85)**	1.90 (0.94, 2.86)**	1.76 (0.72, 2.80)**	1.50 (0.49, 2.51)**
p,p'-DDE	0.48 (-0.79, 1.76)	0.50 (-0.69, 1.68)	0.84 (-0.44, 2.12)	0.48 (-0.75, 1.71)
HCB	0.84 (-1.35, 3.03)	0.21 (-2.20, 2.63)	1.47 (-1.31, 4.26)	0.60 (-1.91, 3.11)
β-HCH	2.25 (1.22, 3.27)**	2.20 (1.13, 3.28)**	2.61 (1.40, 3.82)**	2.34 (1.20, 3.47)**
trans-nonachlor	1.20 (-0.58, 2.98)	0.98 (-0.85, 2.81)	1.84 (-0.18, 3.86)	0.95 (-0.94, 2.83)
PBDE-47	2.09 (0.64, 3.54)**	1.96 (0.42, 3.50)*	2.26 (0.59, 3.93)**	1.86 (0.19, 3.52)*
PBDE-99	1.57 (0.19, 2.95)*	1.51 (0.07, 2.95)*	1.69 (0.11, 3.28)*	1.44 (-0.10, 2.98)
PBDE-100	1.66 (-0.05, 3.37)	1.49 (-0.18, 3.16)	1.90 (0.08, 3.72)*	1.51 (-0.30, 3.32)
PBDE-153	-2.72 (-4.67, -0.77)**	-3.35 (-5.25, -1.46)**	-2.30 (-4.39, -0.20)*	-2.88 (-4.94, -0.82)**
PCB-28	0.09 (-1.34, 1.51)	0.27 (-1.09, 1.63)	-0.35 (-1.85, 1.14)	0.43 (-0.98, 1.84)
PCB-74	3.08 (0.59, 5.57)*	2.38 (-0.31, 5.07)	2.91 (-0.05, 5.88)	2.48 (-0.33, 5.29)
PCB-99	3.94 (1.31, 6.56)**	3.82 (1.32, 6.32)**	3.93 (1.15, 6.70)**	3.30 (0.71, 5.90)*
PCB-118	3.07 (0.58, 5.56)*	2.66 (0.12, 5.19)*	3.23 (0.40, 6.06)*	2.29 (-0.34, 4.92)
PCB-138/158	1.83 (-0.32, 3.99)	1.37 (-0.90, 3.63)	1.88 (-0.62, 4.37)	1.21 (-1.13, 3.56)
PCB-153	0.53 (-1.62, 2.69)	-0.09 (-2.46, 2.27)	0.52 (-2.09, 3.14)	-0.27 (-2.71, 2.17)
PCB-170	-1.00 (-3.07, 1.07)	-1.99 (-4.33, 0.36)	-1.66 (-4.25, 0.94)	-1.82 (-4.25, 0.62)
PCB-180	-1.78 (-3.85, 0.28)	-3.05 (-5.40, -0.70)*	-2.50 (-5.14, 0.14)	-2.66 (-5.09, -0.22)*

*$p<0.05$; **$p<0.01$

[a]All models adjusted for age, household income status, and years of residence in the U.S.

b) Waist circumference

Exposure	GEE (N=466, obs=1,263) Adj-β (95% CI)	Visit 1 (N = 450) Adj-β (95% CI)	Visit 2 (N = 416) Adj-β (95% CI)	Visit 3 (N = 397) Adj-β (95% CI)
p,p'-DDT	3.45 (0.94, 5.95)**	2.87 (0.46, 5.28)*	3.24 (0.81, 5.66)**	2.99 (0.48, 5.50)*
p,p'-DDE	0.08 (-2.88, 3.04)	-0.29 (-3.23, 2.65)	0.74 (-2.23, 3.72)	0.48 (-2.62, 3.58)
HCB	0.77 (-4.36, 5.90)	1.33 (-4.67, 7.33)	1.61 (-4.70, 7.91)	0.44 (-5.87, 6.75)
β-HCH	4.63 (2.19, 7.07)**	5.12 (2.45, 7.78)**	5.06 (2.26, 7.86)**	4.91 (2.09, 7.74)**
trans-nonachlor	2.48 (-2.04, 7.00)	1.99 (-2.72, 6.71)	3.95 (-0.69, 8.58)	2.76 (-1.94, 7.46)
PBDE-47	5.19 (1.47, 8.90)**	4.70 (0.83, 8.57)*	4.78 (0.92, 8.64)*	4.58 (0.40, 8.76)*
PBDE-99	4.61 (1.15, 8.07)**	3.87 (0.23, 7.51)*	4.23 (0.56, 7.91)*	4.30 (0.40, 8.20)*
PBDE-100	4.31 (0.14, 8.48)*	3.81 (-0.44, 8.05)	4.47 (0.26, 8.68)*	3.65 (-0.94, 8.25)
PBDE-153	-6.75 (-11.86,-1.66)**	-7.95(-12.79,-3.10)**	-5.54 (-10.40, -0.68)*	-8.20 (-13.31,-3.10)**
PCB-28	0.34 (-2.83, 3.51)	1.89 (-1.45, 5.23)	-1.32 (-4.73, 2.09)	-0.62 (-4.13, 2.89)
PCB-74	6.75 (0.78, 12.72)*	6.92 (0.28, 13.56)*	9.19 (2.40, 15.97)**	7.01 (0.03, 14.00)*
PCB-99	9.38 (3.20, 15.57)**	9.57 (3.38, 15.76)**	9.49 (3.04, 15.95)**	8.46 (1.96, 14.96)*
PCB-118	6.48 (0.32, 12.65)*	4.74 (-1.63, 11.11)	7.36 (0.84, 13.88)*	7.21 (0.75, 13.68)*
PCB-138/158	3.99 (-1.21, 9.19)	3.26 (-2.38, 8.89)	4.95 (-0.76, 10.67)	4.61 (-1.20, 10.43)
PCB-153	0.66 (-4.53, 5.84)	0.06 (-5.83, 5.96)	2.17 (-3.86, 8.19)	0.05 (-6.04, 6.14)
PCB-170	-3.49 (-8.57, 1.60)	-4.31 (-10.16, 1.54)	-2.56 (-8.56, 3.44)	-3.70 (-9.80, 2.39)
PCB-180	-5.41 (-10.61,-0.22)*	-6.73 (-12.60, -0.85)*	-4.08 (-10.19, 2.03)	-6.43 (-12.54, -0.32)*

*$p<0.05$; **$p<0.01$

[a]All models adjusted for age, household income status, and years of residence in the U.S.

c) Body fat percent

Exposure	GEE (N=446, obs=1,188)	Visit 1 (N = 428)	Visit 2 (N = 389)	Visit 3 (N = 371)
	Adj-β (95% CI)	Adj-β (95% CI)	Adj-β (95% CI)	Adj-β (95% CI)
p,p'-DDT	1.30 (0.07, 2.53)*	1.34 (0.12, 2.56)*	1.40 (0.19, 2.62)*	1.09 (-0.07, 2.26)
p,p'-DDE	-0.32 (-1.86, 1.21)	-0.57 (-2.04, 0.91)	0.19 (-1.30, 1.68)	0.03 (-1.40, 1.45)
HCB	1.49 (-1.19, 4.17)	0.53 (-2.50, 3.57)	1.17 (-2.09, 4.42)	2.59 (-0.36, 5.53)
β-HCH	2.97 (1.77, 4.16)**	3.13 (1.80, 4.46)**	3.45 (2.09, 4.82)**	2.60 (1.31, 3.89)**
trans-nonachlor	2.03 (-0.18, 4.25)	1.56 (-0.79, 3.91)	2.75 (0.44, 5.06)*	2.26 (0.12, 4.40)*
PBDE-47	1.78 (0.17, 3.40)*	2.00 (0.10, 3.91)*	2.14 (0.23, 4.05)*	1.04 (-0.87, 2.96)
PBDE-99	1.02 (-0.52, 2.56)	1.25 (-0.55, 3.04)	1.25 (-0.57, 3.06)	0.51 (-1.27, 2.29)
PBDE-100	1.10 (-0.80, 3.01)	1.18 (-0.90, 3.26)	1.87 (-0.20, 3.94)	0.51 (-1.59, 2.61)
PBDE-153	-3.71 (-6.17, -1.24)**	-4.64 (-7.02, -2.26)**	-2.19 (-4.59, 0.22)	-4.54 (-6.86, -2.21)**
PCB-28	0.04 (-1.41, 1.49)	-0.35 (-2.02, 1.33)	-0.13 (-1.84, 1.57)	0.62 (-0.99, 2.23)
PCB-74	3.03 (0.04, 6.03)*	2.08 (-1.25, 5.41)	3.08 (-0.31, 6.47)	3.47 (0.27, 6.67)*
PCB-99	4.88 (1.91, 7.85)**	3.93 (0.85, 7.02)*	4.75 (1.56, 7.95)**	5.15 (2.22, 8.08)**
PCB-118	3.10 (0.14, 6.07)*	2.49 (-0.67, 5.65)	3.27 (0.06, 6.49)*	2.63 (-0.34, 5.60)
PCB-138/158	2.52 (-0.12, 5.17)	1.68 (-1.13, 4.50)	2.60 (-0.23, 5.43)	2.43 (-0.23, 5.09)
PCB-153	1.58 (-1.14, 4.29)	0.47 (-2.48, 3.41)	1.90 (-1.09, 4.89)	1.30 (-1.49, 4.08)
PCB-170	-0.37 (-3.00, 2.26)	-1.91 (-4.83, 1.01)	-0.81 (-3.80, 2.17)	-0.53 (-3.33, 2.28)
PCB-180	-0.97 (-3.68, 1.73)	-3.08 (-6.03, -0.14)*	-1.27 (-4.30, 1.76)	-0.91 (-3.73, 1.92)

*$p<0.05$; **$p<0.01$

[a]All models adjusted for age, household income status, and years of residence in the U.S.

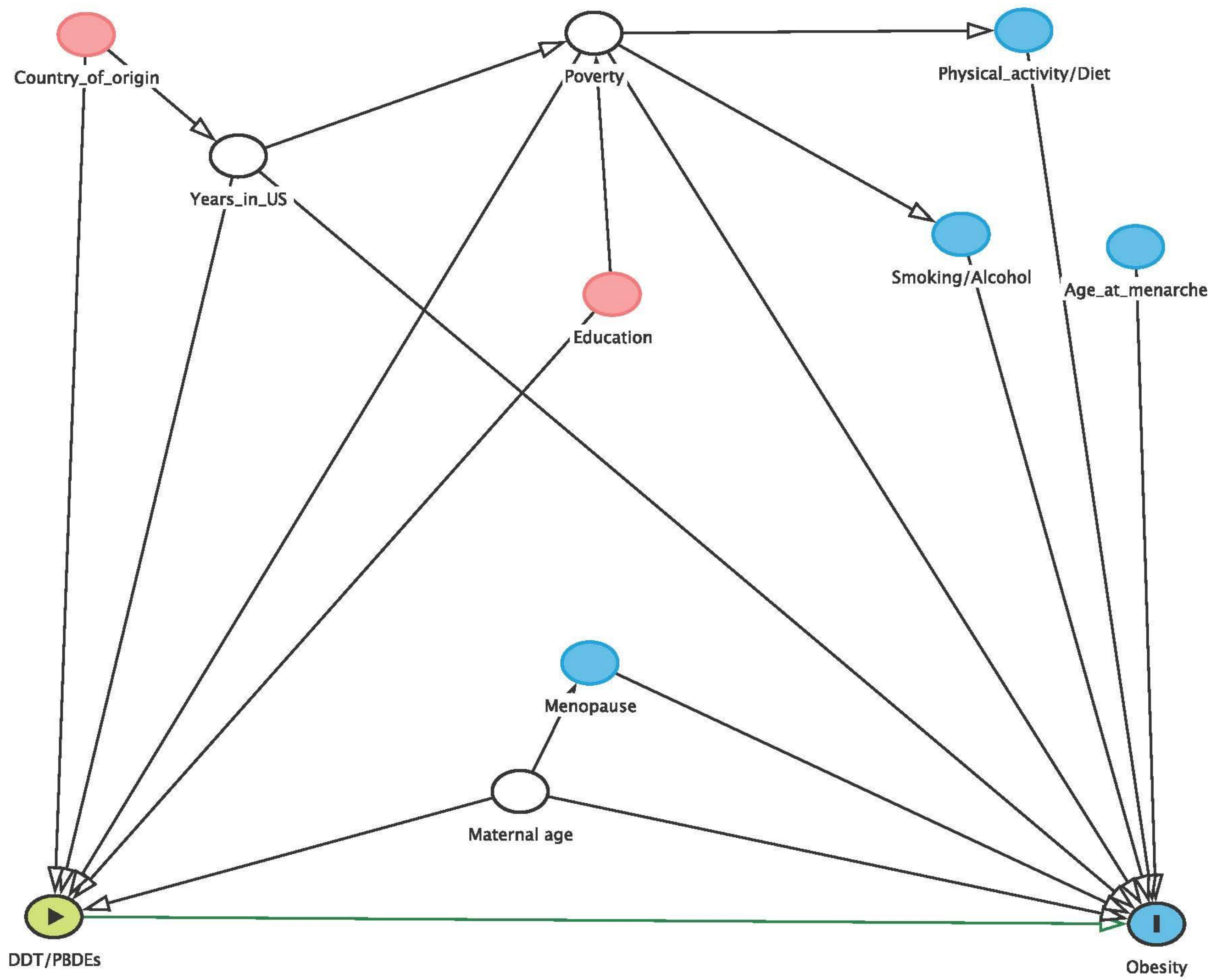
d) Obese status

Exposure	GEE (N=467, obs=1,271) Adj-RR (95% CI)	Visit 1 (N = 456) Adj-RR (95% CI)	Visit 2 (N = 409) Adj-RR (95% CI)	Visit 3 (N = 406) Adj-RR (95% CI)
p,p'-DDT	1.19 (1.07, 1.33)**	1.24 (1.10, 1.39)**	1.18 (1.04, 1.33)**	1.17 (1.03, 1.33)*
p,p'-DDE	1.04 (0.88, 1.22)	1.07 (0.89, 1.29)	1.03 (0.86, 1.23)	1.08 (0.90, 1.28)
HCB	1.04 (0.77, 1.42)	1.07 (0.74, 1.53)	0.97 (0.66, 1.42)	1.14 (0.80, 1.62)
β-HCH	1.22 (1.05, 1.43)*	1.27 (1.06, 1.52)*	1.28 (1.06, 1.55)*	1.28 (1.07, 1.53)**
trans-nonachlor	1.05 (0.82, 1.34)	1.08 (0.81, 1.44)	1.12 (0.85, 1.48)	1.07 (0.82, 1.39)
PBDE-47	1.38 (1.12, 1.70)**	1.42 (1.12, 1.81)**	1.35 (1.07, 1.70)*	1.31 (1.02, 1.67)*
PBDE-99	1.27 (1.05, 1.54)*	1.36 (1.09, 1.69)**	1.21 (0.98, 1.51)	1.21 (0.97, 1.51)
PBDE-100	1.31 (1.05, 1.64)*	1.41 (1.10, 1.82)**	1.27 (1.00, 1.63)	1.25 (0.96, 1.61)
PBDE-153	0.75 (0.56, 0.99)*	0.77 (0.56, 1.06)	0.76 (0.55, 1.05)	0.68 (0.48, 0.97)*
PCB-28	1.07 (0.88, 1.29)	1.12 (0.90, 1.40)	1.05 (0.85, 1.30)	1.04 (0.84, 1.28)
PCB-74	1.07 (0.77, 1.50)	0.97 (0.65, 1.47)	0.90 (0.60, 1.37)	1.30 (0.87, 1.94)
PCB-99	1.58 (1.14, 2.18)**	1.56 (1.06, 2.29)*	1.47 (1.00, 2.17)	1.71 (1.17, 2.51)**
PCB-118	1.27 (0.94, 1.73)	1.27 (0.88, 1.82)	1.08 (0.73, 1.60)	1.49 (1.04, 2.13)*
PCB-138/158	1.11 (0.83, 1.49)	1.14 (0.80, 1.60)	0.99 (0.70, 1.40)	1.23 (0.87, 1.74)
PCB-153	1.00 (0.74, 1.36)	0.96 (0.67, 1.38)	0.90 (0.62, 1.31)	1.14 (0.80, 1.63)
PCB-170	0.77 (0.57, 1.04)	0.69 (0.48, 0.99)*	0.66 (0.46, 0.96)*	0.86 (0.61, 1.23)
PCB-180	0.72 (0.53, 0.98)*	0.61 (0.42, 0.89)*	0.62 (0.42, 0.90)*	0.84 (0.59, 1.21)

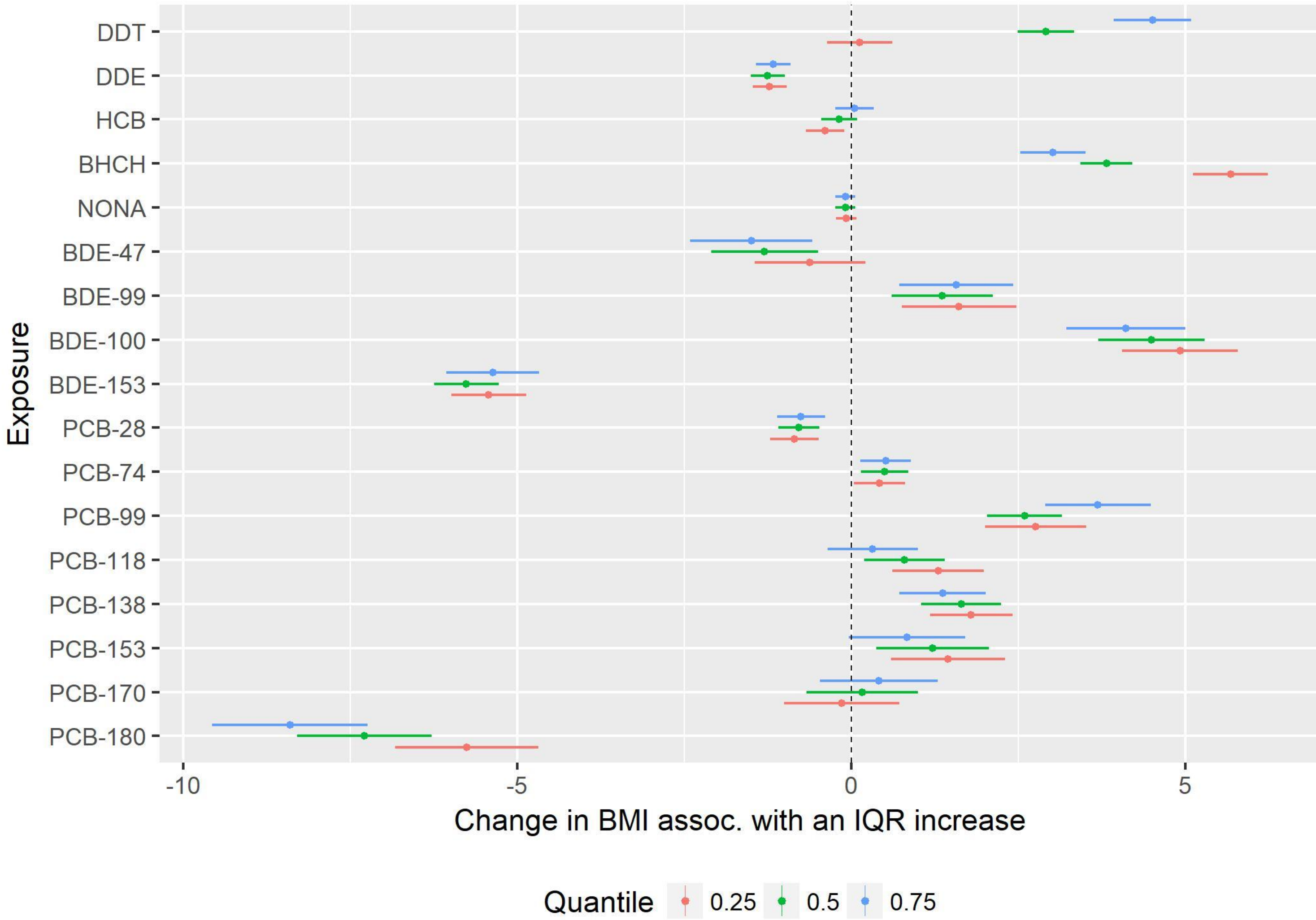
*$p<0.05$; **$p<0.01$

[a]All models adjusted for age, household income status, and years of residence in the U.S.

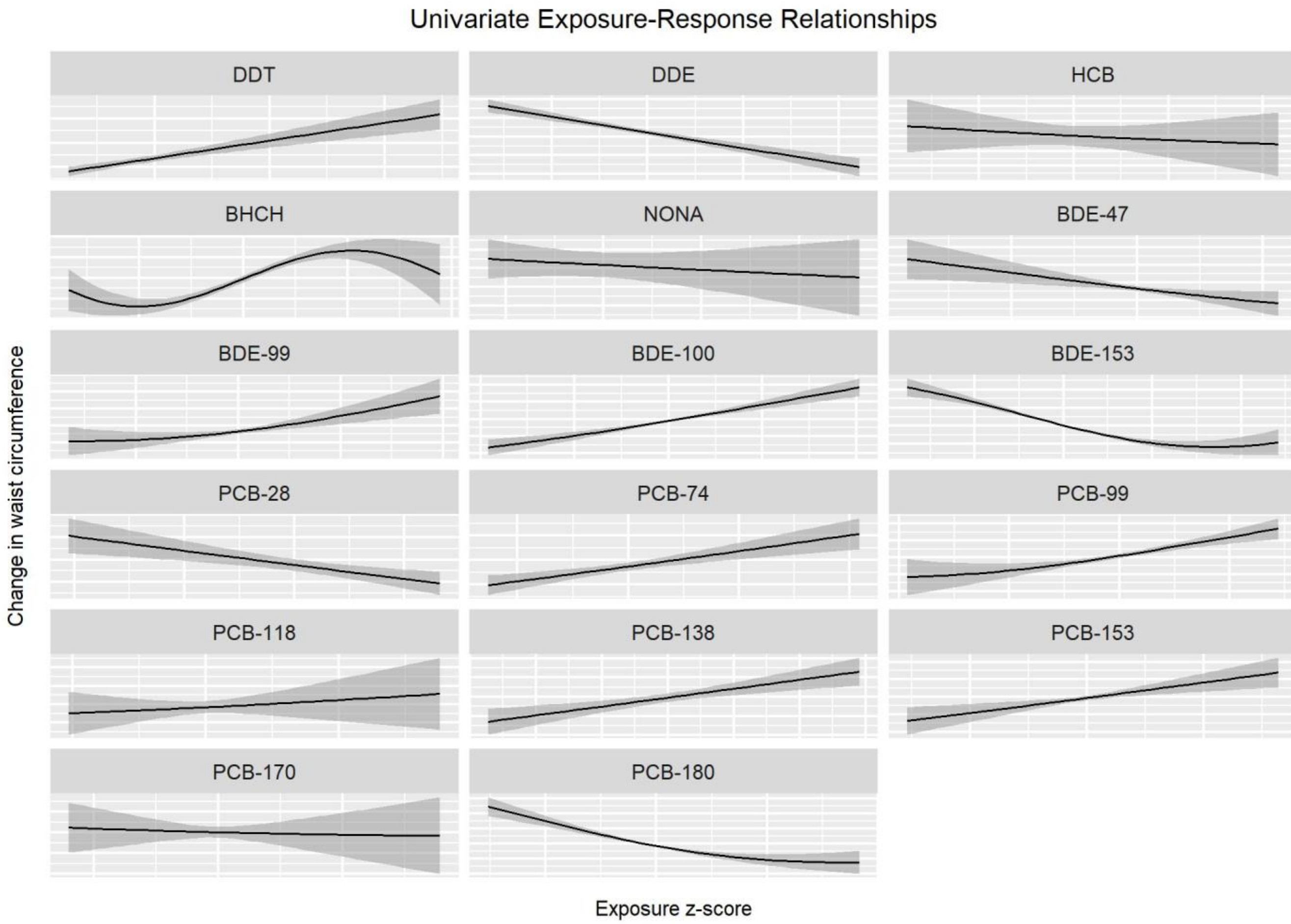
Supplementary eFigure 1: Directed acyclic graph (DAG) of the association between serum POPs and risk of obesity in CHAMACOS women.



Supplementary eFigure 2: Plot of the change in BMI associated with an IQR-change in a single chemical concentration, while all other chemicals in the mixture are fixed at a particular threshold (25th, 50th, 75th percentile), CHAMACOS Study, Salinas, CA 2009-2014

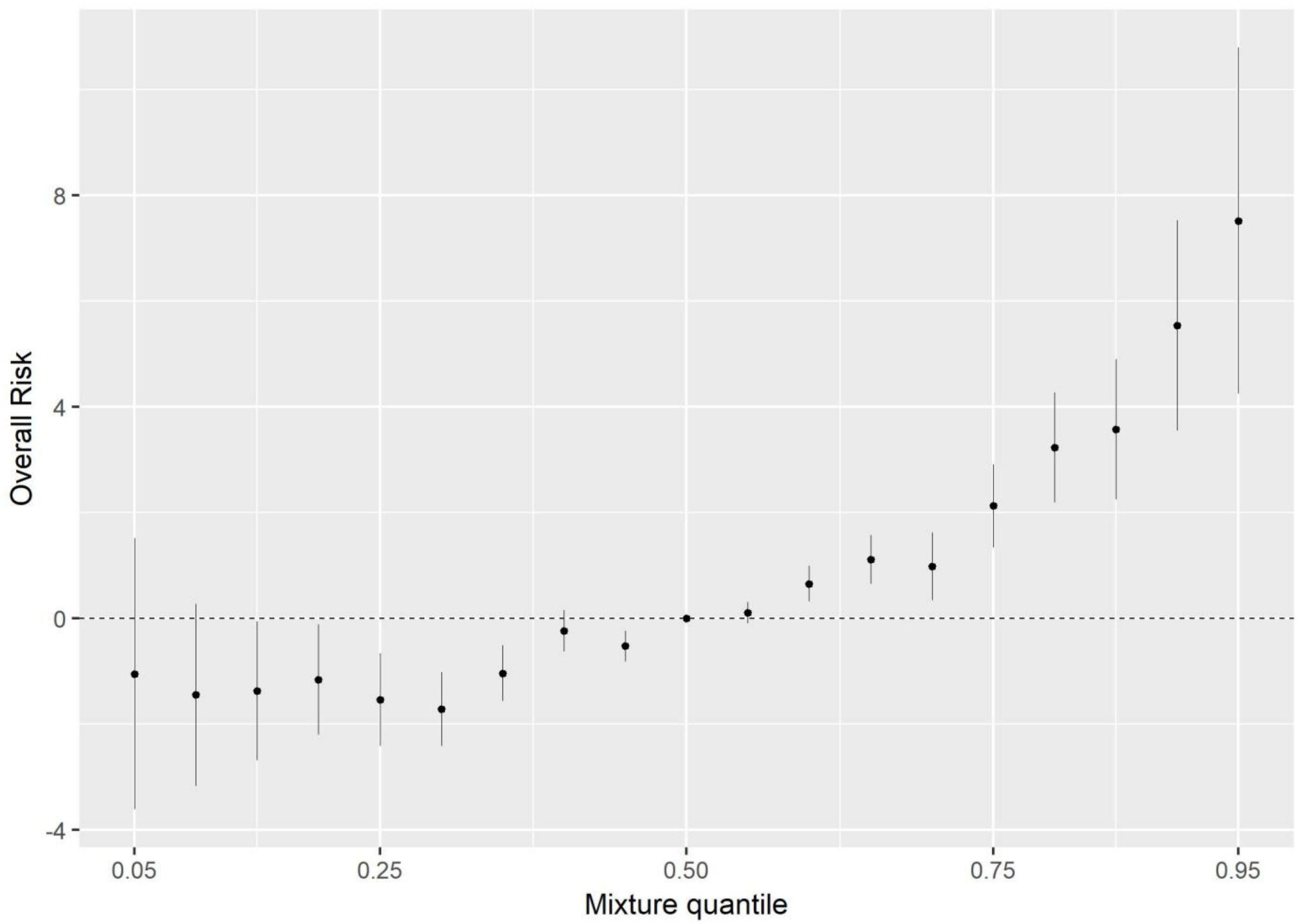


Supplementary eFigure 3. Plots of the univariate exposure-response relationships for chemical exposure and change in waist circumference[a] from BKMR analyses while other chemicals are fixed at their median level, CHAMACOS Study, Salinas, CA, 2009-2014

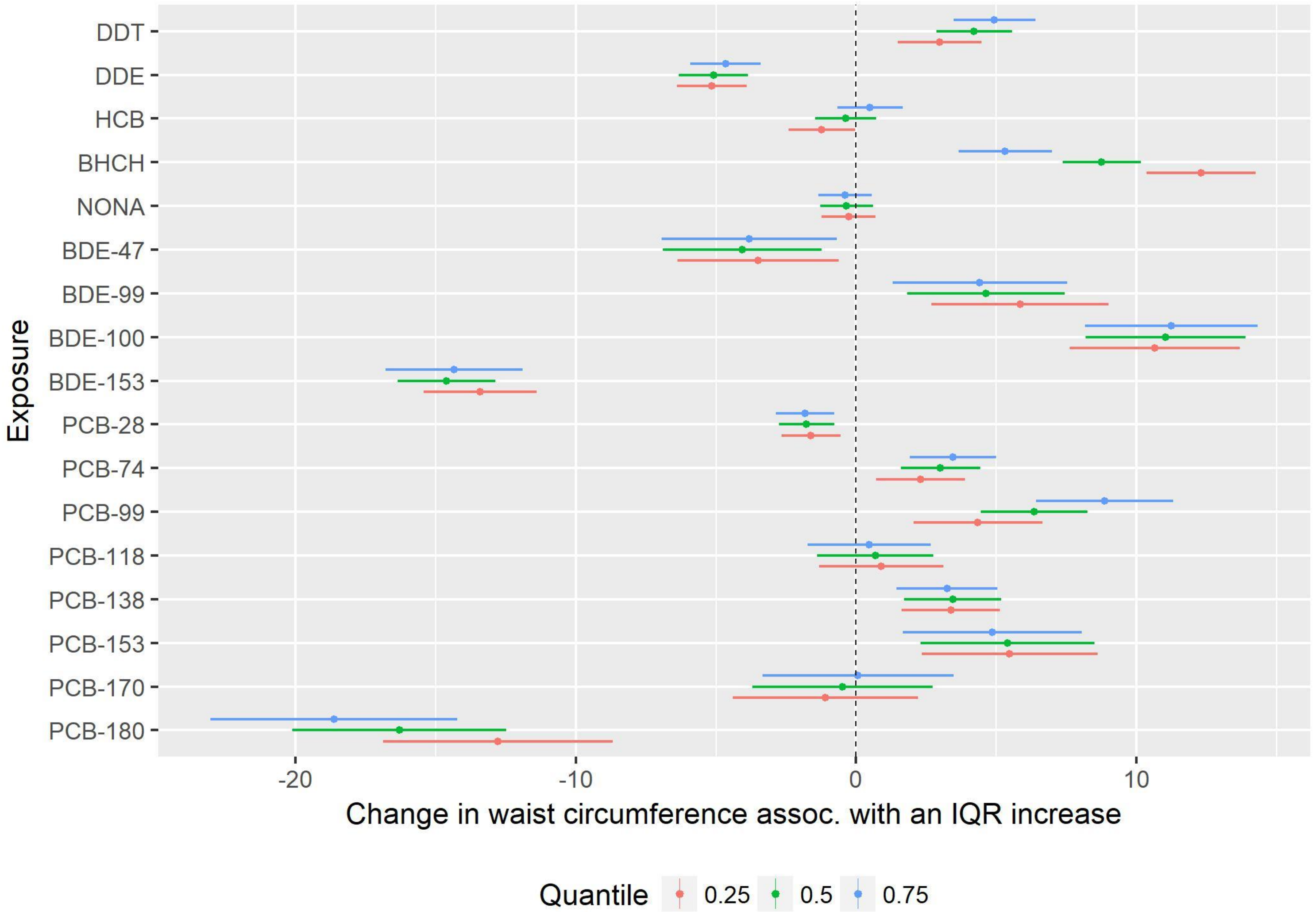


[a]y-axis scales differ between exposures to capture the shape of each exposure-response curve

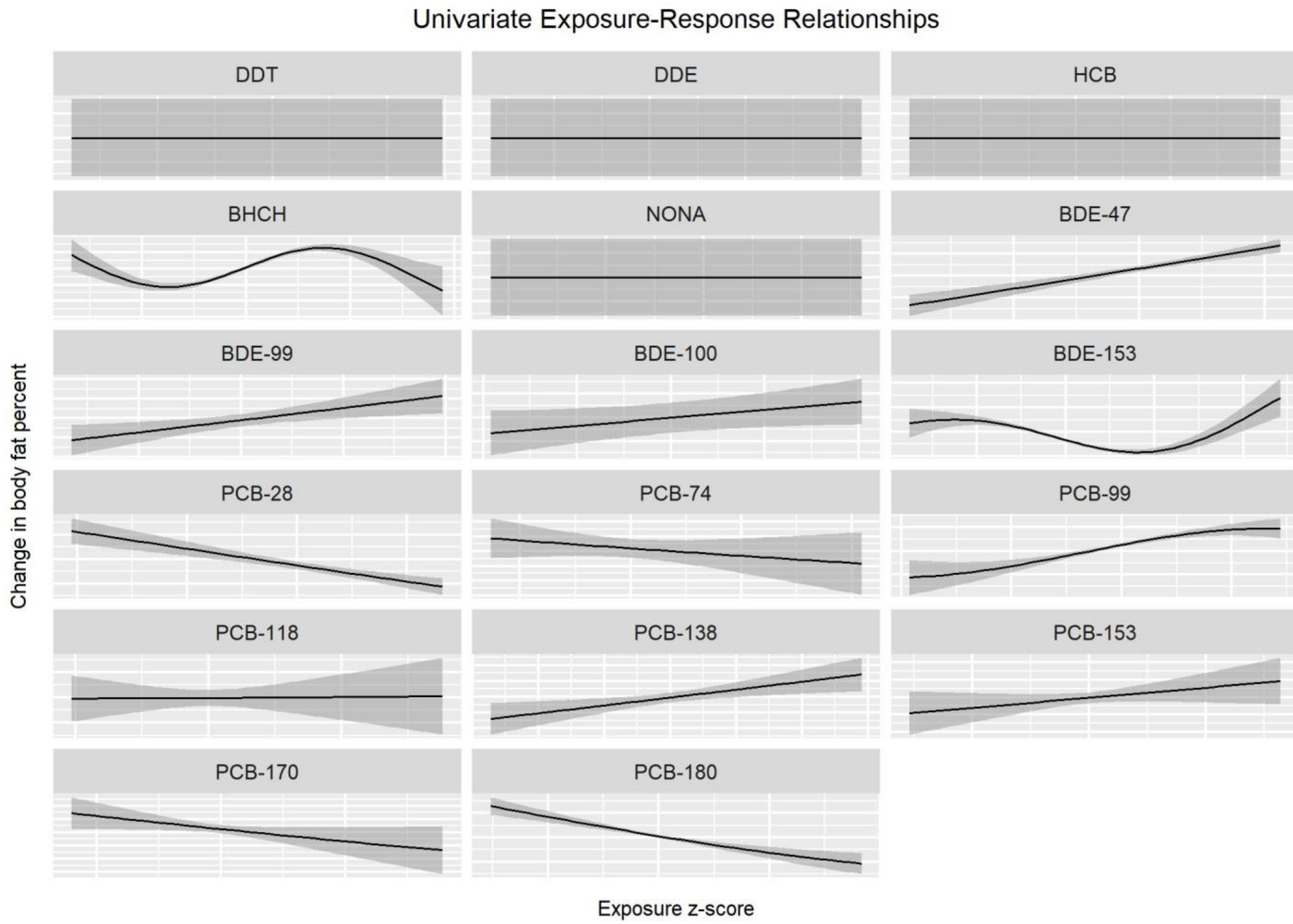
Supplementary eFigure 4. Overall effect of the chemical mixture (estimates and 95% credible intervals) on waist circumference estimated by BKMR. This figure plots the estimated change in waist circumference when chemical exposures are all at a particular percentile compared to when chemical exposures are all at the 50th percentile, CHAMACOS Study, Salinas, CA, 2009-2014.



Supplementary eFigure 5: Plot of the change in waist circumference associated with an IQR-change in a single chemical concentration, while all other chemicals in the mixture are fixed at a particular threshold (25th, 50th, 75th percentile), CHAMACOS Study, Salinas, CA 2009-2014

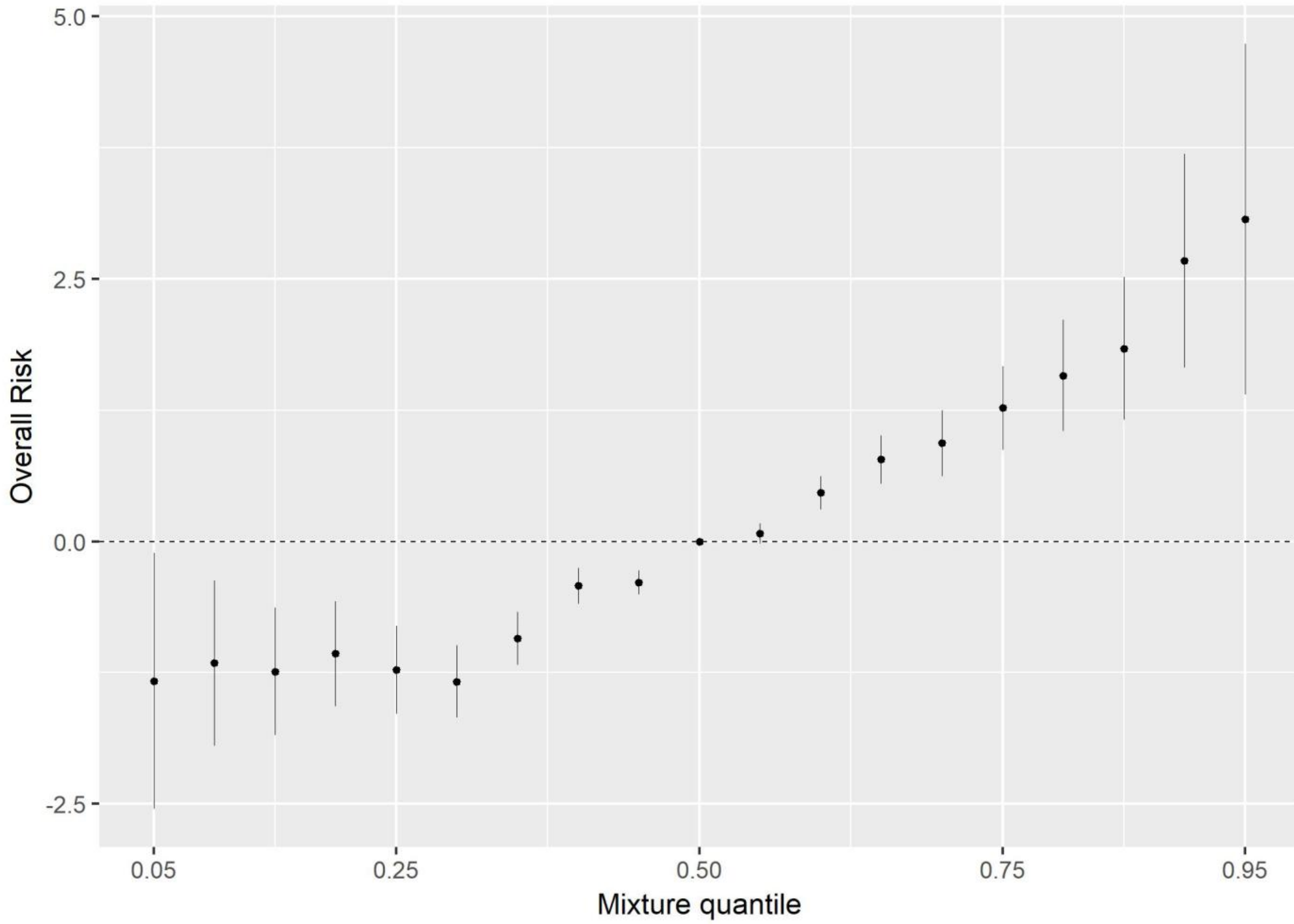


Supplementary eFigure 6. Plots of the univariate exposure-response relationships for chemical exposure and change in body fat percent[a] from BKMR analyses while other chemicals are fixed at their median level, CHAMACOS Study, Salinas, CA, 2009-2014



[a]y-axis scales differ between exposures to capture the shape of each exposure-response curve

Supplementary eFigure 7. Overall effect of the chemical mixture (estimates and 95% credible intervals) on body fat percent estimated by BKMR. This figure plots the estimated change in body fat percent when chemical exposures are all at a particular percentile compared to when chemical exposures are all at the 50th percentile, CHAMACOS Study, Salinas, CA, 2009-2014.



Supplementary eFigure 8: Plot of the change in body fat percent associated with an IQR-change in a single chemical concentration, while all other chemicals in the mixture are fixed at a particular threshold (25th, 50th, 75th percentile), CHAMACOS Study, Salinas, CA 2009-2014