



**FIG E1.** Analysis subsamples for examining associations between exposure to parabens and current asthma among all children and with ED visits and asthma attacks among children aged 6 to 19 years with asthma (NHANES 2005-2014).

**TABLE E1.** Associations of exposure to parabens with respiratory morbidity measures among children with asthma and with current asthma prevalence, adjusting for serum cotinine concentrations\*

	Subsample of children with cotinine data (cotinine not in the model), cPOR			Subsample of children with cotinine data (cotinine not in the model), aPOR			Subsample of children with cotinine data and cotinine in the model, aPOR			Stratified results by sex on the subsample of children with cotinine data and cotinine in the models						
	cPOR	95% CI	P value	aPOR	95% CI	P value	aPOR	95% CI	P value	aPOR	95% CI	P value	aPOR	95% CI	P value	P <sub>int</sub> value
Morbidity										Boys (n = 166)			Girls (n = 146)			
ED visits (n = 312)																
BP	1.18	0.61-2.31	.61	1.26	0.58-2.73	.56	1.25	0.58-2.72	.57	1.97	0.59-6.55	.26	0.90	0.35-2.36	.83	.32
EP	1.05	0.50-2.22	.89	1.10	0.49-2.49	.81	1.12	0.50-2.52	.78	1.08	0.40-2.96	.88	1.15	0.35-3.75	.82	.94
MP	1.01	0.54-1.89	.97	1.03	0.47-2.26	.93	1.03	0.47-2.26	.94	2.86	1.31-6.25	.01†	0.50	0.18-1.39	.18	.003†
PP	1.00	0.64-1.57	1.00	1.05	0.53-2.08	.90	1.04	0.52-2.07	.91	2.37	1.17-4.79	.02†	0.56	0.23-1.40	.21	.003†
Asthma attacks (n = 312)																
BP	1.77	0.91-3.47	.09	2.63	1.31-5.28	.01†	2.64	1.32-5.31	.01†	2.43	1.02-5.78	.04	2.81	1.03-7.70	.05	.83
EP	0.80	0.43-1.50	.49	1.13	0.58-2.20	.71	1.13	0.58-2.20	.72	0.65	0.27-1.57	.34	1.82	0.65-5.09	.25	.15
MP	0.69	0.45-1.06	.09	0.80	0.51-1.28	.35	0.81	0.51-1.28	.36	0.81	0.47-1.40	.44	0.80	0.44-1.46	.47	.99
PP	0.79	0.54-1.17	.23	1.00	0.63-1.59	1.00	1.00	0.63-1.59	.99	1.14	0.69-1.88	.61	0.91	0.50-1.65	.75	.46
Prevalence										Boys (n = 1465)			Girls (n = 1368)			
Current asthma (n = 2833)																
BP	0.83	0.59-1.18	.30	0.83	0.58-1.20	.32	0.83	0.58-1.19	.31	1.07	0.65-1.76	.80	0.69	0.40-1.17	.16	.25
EP	1.15	0.85-1.56	.37	1.10	0.81-1.50	.54	1.11	0.81-1.51	.52	1.09	0.66-1.78	.73	1.12	0.71-1.77	.61	.93
MP	1.17	0.93-1.46	.17	1.21	0.92-1.59	.17	1.21	0.92-1.60	.17	1.41	1.04-1.92	.03	1.03	0.70-1.52	.87	.16
PP	1.15	0.96-1.37	.13	1.17	0.95-1.43	.13	1.17	0.95-1.44	.13	1.24	0.96-1.59	.10	1.11	0.83-1.50	.47	.58

BP and EP values are modeled as less than LOD versus LOD or greater, and MP and PP values are modeled as log<sub>10</sub> concentrations in nanograms per milliliter.

cPOR, Crude prevalence odds ratio; P<sub>int</sub>, interaction term P value (sex\*biomarker concentration term).

\*Crude models were adjusted for log<sub>10</sub> creatinine concentrations and multivariable models were adjusted for age in years, sex (except stratified models), poverty income ratio (continuous), race/ethnicity (non-Hispanic white, non-Hispanic black, Mexican American, and other), survey cycle year (2005-2006, 2007-2008, 2009-2010, 2011-2012, and 2013-2014), log<sub>10</sub> creatinine concentrations, and serum cotinine concentrations.

†P < .05.

**TABLE E2.** Associations of exposure to parabens with respiratory morbidity measures among children with asthma and with current asthma, prevalence, adjusting for BMI z scores\*

	Subsample of children with BMI data (BMI z score not in the model), cPOR			Subsample of children with BMI data (BMI z score not in the model), aPOR			Subsample of children with BMI data and BMI z score in the model, aPOR			Stratified results by sex on the subsample of children with BMI data and BMI z score in the models						<i>P</i> <sub>int</sub>
	cPOR	95% CI	<i>P</i> value	aPOR	95% CI	<i>P</i> value	aPOR	95% CI	<i>P</i> value	Boys (n = 247)			Girls (n = 199)			
										aPOR	95% CI	<i>P</i> value	aPOR	95% CI	<i>P</i> value	
<b>Morbidity</b>																
ED visits (n = 446)										Boys (n = 247)			Girls (n = 199)			
BP	1.43	0.78-2.61	.25	1.44	0.73-2.83	.29	1.46	0.75-2.85	.26	2.19	0.78-6.12	.14	1.04	0.45-2.37	.93	.27
EP	1.07	0.56-2.05	.84	1.07	0.52-2.23	.85	1.10	0.52-2.33	.79	1.16	0.48-2.80	.74	1.06	0.36-3.13	.91	.90
MP	1.22	0.70-2.13	.48	1.22	0.63-2.38	.55	1.24	0.65-2.36	.52	2.59	1.41-4.75	.003†	0.59	0.24-1.45	.25	.001†
PP	1.09	0.72-1.66	.67	1.15	0.64-2.07	.64	1.16	0.65-2.05	.62	2.16	1.22-3.81	.008†	0.62	0.28-1.37	.23	.002†
<b>Asthma attacks (n = 446)</b>																
BP	1.51	0.85-2.67	.16	1.78	0.93-3.41	.08	1.74	0.92-3.27	.09	1.52	0.74-3.10	.25	1.94	0.76-4.98	.17	.67
EP	0.69	0.41-1.17	.17	0.82	0.46-1.43	.47	0.80	0.45-1.41	.43	0.54	0.27-1.09	.09	1.15	0.46-2.87	.76	.21
MP	0.76	0.55-1.06	.10	0.82	0.56-1.19	.28	0.81	0.55-1.18	.27	0.87	0.57-1.34	.53	0.75	0.43-1.30	.30	.62
PP	0.77	0.55-1.06	.11	0.86	0.59-1.25	.42	0.85	0.59-1.24	.41	0.95	0.65-1.40	.80	0.77	0.45-1.31	.33	.43
<b>Prevalence</b>																
Current asthma (n = 3993)										Boys (n = 2056)			Girls (n = 1937)			
BP	0.83	0.63-1.08	.16	0.83	0.62-1.11	.20	0.84	0.63-1.11	.22	0.95	0.64-1.41	.80	0.75	0.48-1.19	.22	.48
EP	1.15	0.90-1.48	.26	1.10	0.85-1.42	.46	1.11	0.86-1.43	.40	1.08	0.74-1.58	.69	1.14	0.78-1.67	.48	.84
MP	1.21	1.01-1.45	.04†	1.18	0.95-1.47	.14	1.20	0.96-1.48	.10	1.36	1.05-1.77	.02†	1.03	0.75-1.41	.87	.16
PP	1.21	1.04-1.41	.01†	1.20	1.01-1.44	.04†	1.22	1.02-1.45	.03†	1.25	1.00-1.56	.05	1.18	0.91-1.53	.21	.72

BP and EP values are modeled as less than LOD versus LOD or greater, and MP and PP values are modeled as log<sub>10</sub> concentrations in nanograms per milliliter.

cPOR, Crude prevalence odds ratio; *P*<sub>int</sub>, interaction term *P* value (sex\*biomarker concentration term).

\*Crude models were adjusted for log<sub>10</sub> creatinine concentrations, and multivariable models were adjusted for age in years, sex (except stratified models), poverty income ratio (continuous), race/ethnicity (non-Hispanic white, non-Hispanic black, Mexican American, and other), survey cycle year (2005-2006, 2007-2008, 2009-2010, 2011-2012, and 2013-2014), log<sub>10</sub> creatinine concentration, and BMI z score.

†*P* < .05.

**TABLE E3.** Associations of exposure to parabens with respiratory morbidity measures among children with asthma and with current asthma prevalence, adjusting for log<sub>10</sub> triclosan, bisphenol A, and 2,5-dichlorophenol concentrations\*

	All children, cPOR			All children (adjusting for log <sub>10</sub> triclosan, bisphenol A, and 2,5-dichlorophenol concentrations), aPOR			Stratified results by sex adjusting for log <sub>10</sub> concentrations of triclosan, bisphenol A, and 2,5-dichlorophenol						<i>P</i> <sub>int</sub> value
	cPOR	95% CI	<i>P</i> value	aPOR	95% CI	<i>P</i> value	Boys (n = 248)			Girls (n = 202)			
Morbidity													
ED visits (n = 450)													
BP	1.43	0.78-2.63	.24	1.36	0.67-2.79	.39	2.22	0.78-6.28	.13	0.88	0.36-2.12	.77	.19
EP	1.07	0.56-2.05	.84	1.06	0.52-2.13	.87	1.18	0.48-2.88	.72	0.96	0.35-2.62	.94	.76
MP	1.22	0.70-2.14	.48	1.24	0.65-2.37	.51	2.70	1.42-5.14	.003†	0.57	0.25-1.30	.18	.001†
PP	1.10	0.72-1.66	.66	1.18	0.67-2.10	.56	2.24	1.25-4.02	.01†	0.60	0.30-1.24	.17	.001†
Asthma attacks (n = 450)													
BP	1.52	0.86-2.68	.15	1.81	0.93-3.55	.08	1.56	0.76-3.19	.22	2.06	0.76-5.58	.15	.63
EP	0.69	0.41-1.16	.16	0.82	0.47-1.43	.49	0.55	0.27-1.11	.09	1.22	0.50-2.98	.65	.17
MP	0.76	0.55-1.05	.09	0.81	0.56-1.18	.27	0.85	0.56-1.29	.44	0.78	0.45-1.33	.35	.77
PP	0.77	0.56-1.06	.11	0.86	0.59-1.26	.44	0.94	0.64-1.38	.74	0.80	0.47-1.36	.40	.56
Prevalence													
Current asthma (n = 4023)													
Boys (n = 2068)													
BP	0.82	0.63-1.08	.15	0.81	0.61-1.08	.15	0.96	0.64-1.42	.82	0.71	0.45-1.12	.14	.37
EP	1.14	0.89-1.47	.29	1.07	0.83-1.38	.61	1.08	0.74-1.58	.69	1.06	0.72-1.56	.77	.95
MP	1.21	1.01-1.45	.04†	1.16	0.93-1.44	.19	1.34	1.03-1.74	.03†	0.98	0.71-1.35	.90	.12
PP	1.21	1.04-1.41	.02†	1.18	0.99-1.41	.07	1.24	0.99-1.55	.06	1.13	0.87-1.47	.37	.58

BP and EP values are modeled as less than LOD versus LOD or greater, and MP and PP values are modeled as log<sub>10</sub> concentrations in nanograms per milliliter.

cPOR, Crude prevalence odds ratio; *P*<sub>int</sub>, interaction term *P* value (sex\*biomarker concentration term).

\*Crude models were adjusted for log<sub>10</sub> creatinine concentrations, and multivariable models were adjusted for age in years, sex (except stratified models), poverty income ratio (continuous), race/ethnicity (non-Hispanic white, non-Hispanic black, Mexican American, and other), survey cycle year (2005-2006, 2007-2008, 2009-2010, 2011-2012, and 2013-2014), and log<sub>10</sub>-transformed creatinine, triclosan, bisphenol A, and 2,5-dichlorophenol concentrations.

†*P* < .05.