

Supplementary Materials

Tetrachloroethylene Exposure and Neurobehavioral Performance among Children Living Near Multiple Contamination Sites

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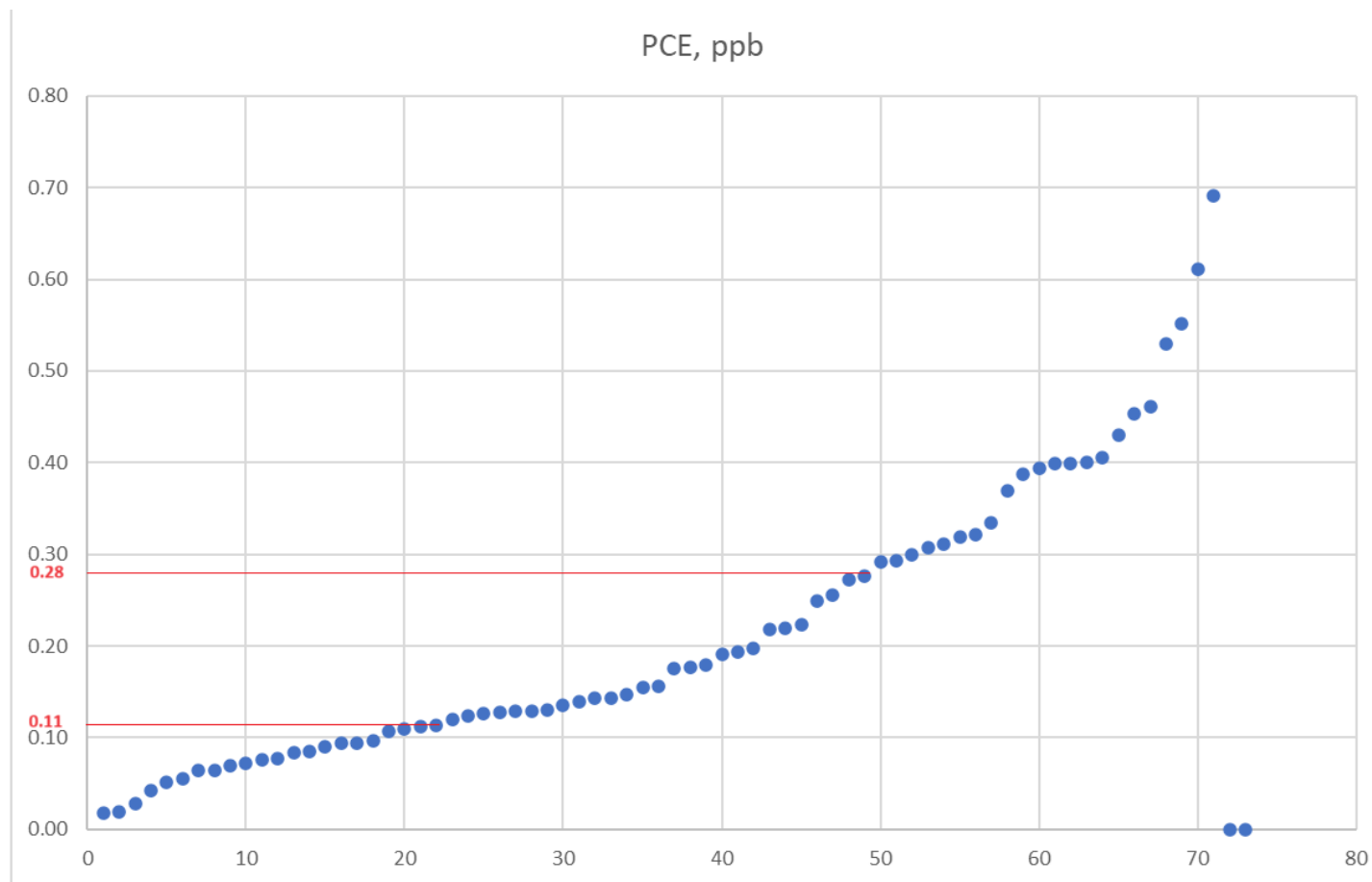
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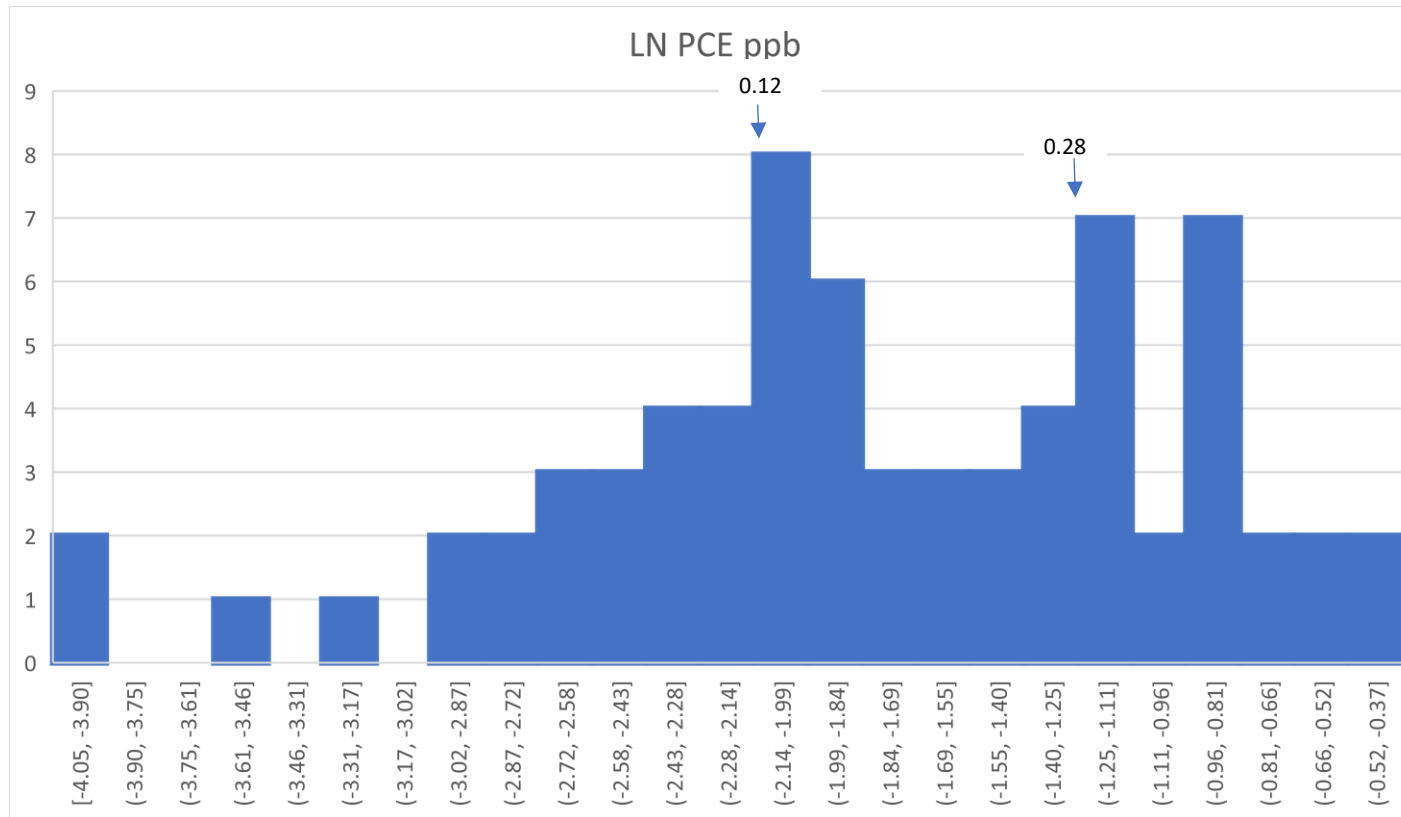
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1. Choosing cut-off points.

The cut-off points are illustrated in Supplementary Figure 1 and Supplementary Figure 1 as concentrations in ppb, which were converted to $\mu\text{g}/\text{m}^3$. The determination was based on the change in the slope of PCE concentration using a cumulative frequency distribution plot and the number of participants in each group (Supplementary Figure 1). Similarly, the cut-off points in Figure 2 were determined using the same method with a frequency distribution plot. The 3rd set of cut-off points were determined using the mean and the median of PCE concentration in exhaled breath of all participants ($1.22 \mu\text{g}/\text{m}^3$ and $2.17 \mu\text{g}/\text{m}^3$, respectively). These three sets of cut-off points were used to create different exposure categories for model comparison, as shown in Supplementary Table 1.



Supplementary Figure 1. Cut points to form 'Level 1 exposure' (PCE concentration $\leq 0.75 \mu\text{g}/\text{m}^3$), 'Level 2 exposure' ($0.75 \mu\text{g}/\text{m}^3 < \text{PCE concentration} \leq 1.90 \mu\text{g}/\text{m}^3$), and 'Level 3 exposure' (PCE concentration $> 1.90 \mu\text{g}/\text{m}^3$) groups. Note: PCE concentration is in ppb in the chart, which is converted to $\mu\text{g}/\text{m}^3$.



Supplementary Figure 2. Cut points to form 'Level 1 exposure' (PCE concentration $\leq 0.81 \mu\text{g}/\text{m}^3$), 'Level 2 exposure' ($0.81 \mu\text{g}/\text{m}^3 < \text{PCE concentration} \leq 1.90 \mu\text{g}/\text{m}^3$), and 'Level 3 exposure' (PCE concentration $> 1.90 \mu\text{g}/\text{m}^3$) groups. Note: PCE concentration is in ppb in the chart, which is converted to $\mu\text{g}/\text{m}^3$.

Supplementary Table 1. β -Coefficients, 95% Confidence Intervals (CIs), and p-values for the association of PCE exposure using a log-transformed model and multiple categorical groups with neurobehavioral performance scores

Assessment / Exposure		PCE log2	Level 2 exposure (1.22 $\mu\text{g}/\text{m}^3$ -2.17 C) (n=17) β (95% CI)* P-value	Level 3 exposure (>2.17 $\mu\text{g}/\text{m}^3$) (n=17) β (95% CI)* P-value	Level 2 exposure (0.75 $\mu\text{g}/\text{m}^3$ -1.90 $\mu\text{g}/\text{m}^3$) (n=27) β (95% CI)* P-value	Level 3 exposure (>1.90 $\mu\text{g}/\text{m}^3$) (n=24) β (95% CI)* P-value	Level 2 exposure (0.81 $\mu\text{g}/\text{m}^3$ -1.90 $\mu\text{g}/\text{m}^3$) (n=25) β (95% CI)* P-value	Level 3 exposure (>1.90 $\mu\text{g}/\text{m}^3$) (n=24) β (95% CI)* P-value
NIH	Fluid Composite ^a	-2.6 (-5.9,0.8) 0.131	-4.3 (-15.1,6.5) 0.426	-7.0 (-17.8,3.8) 0.201	-12.0 (-23.4,-0.6) 0.039	-12.2 (-23.4,-1.0) 0.033	-11.1 (-22.1,0.4) 0.058	-11.1 (-22.0,-0.2) 0.046
	Crystallized Composite ^b	-0.7 (-3.2,1.9) 0.601	-3.5 (-11.4,4.4) 0.379	-5.9 (-14.0,2.2) 0.148	-4.4 (-12.7,3.8) 0.286	-6.9 (-15.2,1.5) 0.105	-2.2 (-10.4,6.1) 0.600	-5.4 (-13.5,2.7) 0.189
	Total Composite ^a	-1.9 (-4.5,0.8) 0.163	-4.6 (-13.2,4.0) 0.290	-7.0 (-15.3,1.4) 0.101	-10.1 (-19.2,-1.1) 0.028	-11.8 (-20.4,-3.2) 0.008	-8.1 (-17.1,0.9) 0.077	-10.2 (-18.6,-1.8) 0.018

	Early Child Composite^c	-2.45 (-4.74,- 0.15) 0.037	-4.98 (- 12.81,2.85) 0.209	-8.54 (-16.05,- 1.02) 0.027	-7.04 (- 14.84,0.77) 0.077	-11.03 (-18.69,- 3.38) 0.005	-6.14 (- 13.87,1.60) 0.118	-10.3 (-17.8,-2.8) 0.008
BASC	Externalizing Problems	0.6 (-1.4,2.6) 0.554	-4.7 (-11.4,1.9) 0.158	2.3 (-4.4,8.9) 0.500	-2.7 (-9.3,4.0) 0.423	0.8 (-6.1,7.6) 0.824	-5.6 (-12.1,1.0) 0.094	-0.6 (-7.2,6.0) 0.860
	Internalizing Problems	1.1 (-1.0,3.3) 0.299	-3.1 (-10.3,4.1) 0.393	3.7 (-3.6,10.9) 0.316	-0.4 (-7.7,6.9) 0.918	2.8 (-4.6,10.2) 0.448	-1.9 (-9.1,5.2) 0.590	2.0 (-5.2,9.2) 0.573
	Behavioral (Symptoms Index)^c	-0.0 (-2.3,2.3) 0.980	-6.7 (-14.0,0.5) 0.066	2.0 (-5.2,9.2) 0.590	-1.8 (-9.2,5.6) 0.626	0.7 (-6.9,8.3) 0.853	-5.4 (-12.6,1.9) 0.143	-1.1 (-8.4,6.3) 0.771
	Adaptive skills	-0.8 (-2.6,1.0) 0.374	1.7 (-4.2,7.6) 0.567	-3.2 (-9.1,2.6) 0.277	-4.4 (-10.2,1.4) 0.133	-3.5 (-9.5,2.4) 0.240	-3.0 (-8.8,2.8) 0.309	-2.6 (-8.5,3.3) 0.374
WRAT	Math Computation	-0.5 (-2.7,1.6) 0.616	0.2 (-7.0,7.3) 0.962	-6.7 (-13.7,0.4) 0.062	-2.7 (-9.8,4.5) 0.462	-5.5 (-12.8,1.7) 0.130	-4.7 (-1.8,2.5) 0.195	-6.5 (-13.5,0.5) 0.070
	Spelling	-0.8 (-2.9,1.4) 0.475	-0.4 (-7.5,6.7) 0.918	-6.3 (-13.3,0.8) 0.083	-2.9 (-9.9,4.2) 0.422	-5.0 (-12.2,2.3) 0.178	-1.1 (-8.2,5.9) 0.749	-4.0 (-11.1,3.2) 0.272
	Word Reading	-0.9 (-2.9,1.1) 0.366	-0.1 (-6.4,6.3) 0.989	-8.2 (-14.5,- 1.9) 0.012	-4.3 (-10.7,2.1) 0.182	-6.3 (-12.9,0.2) 0.058	-2.9 (-9.3,3.5) 0.375	-5.4 (-11.9,1.0) 0.099

	Sentence Comprehension^c	0.4 (-2.0,2.9) 0.784	-2.3 (-11.2,6.6) 0.608	-5.0 (-13.6,3.4) 0.235	-4.3 (-12.9,4.3) 0.317	-2.8 (-11.5,5.9) 0.524	-2.9 (-11.6,5.8) 0.509	-1.9 (-10.5,6.7) 0.664
	Reading Composite^c	-0.3 (-2.7,2.1) 0.807	-2.0 (-10.1,6.1) 0.625	-7.0 (-14.8,0.7) 0.076	-5.5 (-13.4,2.3) 0.165	-5.5 (13.5,2.5) 0.175	-4.0 (-11.9,4.0) 0.322	-4.5 (-12.4,3.4) 0.262

* β (95% CI)*; β : Beta coefficient, (95% CI): 95% confidence interval

a: Fluid, Total n=57, *b*: Crystallized n=58, *c*: Early Childhood, Behavioral Symptoms Index, Sentence Comprehension, Reading Composite n = 72.

Sample sizes were reduced from 73 to 72 and from 58 to 57 due to incomplete data from one participant.