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Supplemental Material

Organophosphate Pesticide Metabolite Concentrations in Urine during Pregnancy and Offspring Nonverbal IQ at Age 6 Years

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Table S1. Effect allele and single nucleotide polymorphism (SNP) descriptive statistics.

PON1	SNP	Al1	Al2	Freq1	MAF	Quality	R²
PON1-Q192	rs662	C	T	0.35474	0.35474	0.99993	0.99989
PON1-108	rs705379	G	A	0.56718	0.43282	0.98614	0.95791
PON1-161	rs705381	C	T	0.74361	0.25639	0.99570	0.98359
PON1- L55M	rs854560	A	T	0.67882	0.32118	0.99974	0.99903
PON1-909	rs854572	C	G	0.52449	0.47551	0.99881	0.99633

Note: rs662 was directly genotyped. rs705379, rs705381, rs854560 and rs854572 are based on imputed genotypes.

Table S2. Akaike information criterion (AIC) comparison between untransformed (UTF) and log₁₀ transformed DAP metabolite concentrations at <18 weeks, 18-25 weeks, and >25 weeks.

	UTF <18 weeks	Log ₁₀ <18 weeks	UTF 18-25 weeks	Log ₁₀ 18-25 weeks	UTF >25 weeks	Log ₁₀ >25 weeks	Mean UTF DAP	Mean Log ₁₀ DAP	Mutually Adjusted UTF DAP	Mutually Adjusted Log ₁₀ DAP
Imputation set										
1	5825.958	5825.072	5825.344	5826.025	5823.157	5821.785	5825.786	5825.331	5825.071	5823.574
2	5826.598	5825.442	5825.925	5826.666	5823.462	5821.939	5826.434	5826.020	5824.826	5822.834
3	5826.639	5826.015	5826.090	5826.748	5823.600	5822.573	5826.412	5826.123	5825.320	5824.369
4	5827.486	5827.284	5827.329	5828.101	5825.006	5823.170	5827.350	5827.205	5826.170	5824.875
5	5824.194	5823.400	5823.744	5824.393	5822.113	5820.892	5824.175	5823.845	5823.871	5822.498
6	5828.589	5827.536	5828.423	5829.002	5826.163	5824.449	5828.470	5828.001	5827.932	5825.837
7	5825.592	5824.710	5825.191	5825.782	5823.032	5821.161	5825.425	5824.928	5825.028	5822.869
8	5824.786	5823.832	5823.945	5824.831	5821.791	5820.049	5824.652	5824.162	5823.267	5821.500
9	5826.308	5825.438	5825.829	5826.475	5823.164	5821.843	5826.078	5825.800	5824.742	5823.239
10	5826.741	5825.873	5826.505	5826.959	5823.316	5821.546	5826.308	5825.769	5825.646	5823.532
Mean AIC	5826.289	5825.46	5825.833	5826.498	5823.48	5821.941	5826.109	5825.718	5825.187	5823.513

Table S3. Correlation coefficients for maternal and 6-year-old child urine dialkyl phosphate metabolite concentrations (n=708).

Spearman's rho correlations coefficients	< 18 weeks gestation	18 – 25 weeks gestation	> 25 weeks gestation	Child at age 6
Dialkyl phosphates (total)				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.22**	1		
> 25 weeks' gestation	0.17**	0.31**	1	
child at age 6	0.05	0.03	0.04	1
Diethyl alkyl phosphates				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.29**	1		
> 25 weeks' gestation	0.18**	0.28**	1	
child at age 6	0.07	0.01	0.07	1
Dimethyl alkyl phosphates				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.19**	1		
> 25 weeks' gestation	0.15**	0.30**	1	
child at age 6	0.02	0.03	0.02	1
Pearson correlation coefficients (log10)				
Dialkyl phosphates (total)				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.24**	1		
> 25 weeks' gestation	0.18**	0.32**	1	
child at age 6	-0.01	0.01	-0.01	1
Diethyl alkyl phosphates				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.22**	1		
> 25 weeks' gestation	0.12**	0.23**	1	
child at age 6	0.01	-0.03	0.04	1
Dimethyl alkyl phosphates				
< 18 weeks' gestation	1			
18 – 25 weeks' gestation	0.20**	1		
> 25 weeks' gestation	0.16**	0.31**	1	
child at age 6	-0.02	0.02	-0.01	1

*P<0.05 ** P<0.01

Table S4. Fully adjusted: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (<18 weeks) urine dialkyl phosphate metabolite concentration by **PON1 type** (N=474).

		N	Adjusted models ^a											
			Dialkyl phosphates (total) ^b			Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d					
			β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192														
	QQ (TT)	226	1.3	-4.9	to	7.4	4.2	-1.0	to	9.4	-0.1	-6.0	to	5.8
	QR (CT)	202	-3.2	-9.7	to	3.4	-3.7	-7.7	to	0.3	-3.3	-9.6	to	3.0
	RR (CC) ^e	46	-4.7	-29.6	to	20.3	5.0	-12.7	to	22.6	-6.6	-30.0	to	16.7
	P interaction ^f					0.292				0.042				0.437
PON1L55														
	TT	65	-1.0	-15.5	to	13.6	-0.5	-11.1	to	10.2	-0.7	-14.7	to	13.3
	AT	198	-4.7	-12.1	to	2.8	-1.3	-15.1	to	4.4	-5.2	-15.1	to	1.8
	AA	211	0.2	-6.1	to	6.5	-2.1	-6.0	to	1.7	-0.4	-6.4	to	5.7
	P interaction ^f					0.968				0.402				0.982
PON1-108														
	TT	90	-3.7	-14.8	to	7.4	1.1	-6.5	to	8.7	-5.5	-16.2	to	5.1
	CT	232	2.0	-4.6	to	8.7	3.3	-2.6	to	9.3	1.3	-5.0	to	7.6
	CC	152	-2.1	-9.9	to	5.7	-3.3	-7.6	to	1.1	-2.3	-9.7	to	5.1
	P interaction ^f					0.722				0.175				0.995
PON1-909														
	GG	107	-4.8	-15.1	to	5.5	-0.3	-7.2	to	6.7	-6.0	-15.9	to	3.9
	CG	229	1.8	-4.8	to	8.4	2.3	-3.6	to	8.3	1.3	-4.9	to	7.6
	CC	138	-2.5	-11.2	to	6.1	-2.9	-7.4	to	1.7	-3.2	-11.5	to	5.0
	P interaction ^f					0.677				0.254				0.870
PON1-161														
	GG ^e	37	8.4	-13.2	to	30.1	12.3	-6.0	to	30.7	6.5	-13.7	to	26.8
	CG	172	-2.9	-9.7	to	3.9	-0.3	-6.2	to	5.7	-3.1	-9.6	to	3.5
	CC	265	-1.9	-8.1	to	4.2	-2.3	-5.9	to	1.4	-2.8	-8.7	to	3.1
	P interaction ^f					0.599				0.152				0.458

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. BMI included as a continuous variable for PON1Q192 and PON1-161 because of missing levels in BMI for RR and GG.

f. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S5. Fully adjusted: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal (**18-25 weeks**) urine dialkyl phosphate metabolite concentration by **PON1 type** (N=474).

		N	Adjusted models ^a											
			Dialkyl phosphates (total) ^b			Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d					
			β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192														
	QQ (TT)	226	2.6	-4.2	to	9.4	1.7	-3.1	to	6.5	2.3	-4.4	to	9.0
	QR (CT)	202	3.7	-4.2	to	11.6	2.5	-1.7	to	6.7	2.7	-4.7	to	10.0
	RR (CC) ^e	46	1.1	-24.3	to	26.6	3.0	-17.6	to	23.6	-1.0	-24.9	to	22.9
	P interaction ^f				0.724				0.910					0.543
PON1L55														
	TT	65	8.1	-5.6	to	21.8	8.2	-3.2	to	19.6	7.0	-6.7	to	20.8
	AT	198	1.2	-6.4	to	8.9	-0.9	-7.9	to	5.0	1.6	-7.9	to	9.0
	AA	211	1.5	-6.0	to	9.1	3.0	-0.8	to	6.8	-0.7	-7.8	to	6.5
	P interaction ^f				0.604				0.872					0.381
PON1-108														
	TT	90	7.1	-6.4	to	20.7	6.3	-4.3	to	16.9	5.3	-7.4	to	18.1
	CT	232	0.2	-7.0	to	7.4	0.0	-4.0	to	4.0	0.2	-6.8	to	7.1
	CC	152	1.8	-6.7	to	10.3	4.8	-1.2	to	10.8	-0.1	-8.3	to	8.1
	P interaction ^f				0.232				0.951					0.175
PON1-909														
	GG	107	3.9	-7.9	to	15.8	4.1	-4.9	to	13.1	2.7	-8.5	to	13.9
	CG	229	1.2	-6.0	to	8.5	0.2	-3.8	to	4.2	1.3	-5.7	to	8.3
	CC	138	2.8	-6.3	to	11.9	5.0	-1.4	to	11.4	0.6	-8.2	to	9.4
	P interaction ^f				0.414				0.808					0.317
PON1-161														
	GG ^e	37	6.0	-28.5	to	40.4	-0.1	-16.3	to	16.1	5.0	-29.0	to	38.9
	CG	172	-1.5	-9.6	to	6.6	1.4	-2.7	to	5.5	-1.8	-9.4	to	5.7
	CC	265	4.4	-2.3	to	11.1	3.4	-1.5	to	8.4	3.3	-3.2	to	9.8
	P interaction ^f				0.808				0.920					0.822

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP

e. BMI included as a continuous variable for PON1Q192 and PON1-161 because of missing levels in BMI for RR and GG.

f. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S6. Fully adjusted: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal (>25 weeks) urine dialkyl phosphate metabolite concentration by **PON1 type** (N=474).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b				Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d				
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-6.6	-13.4	to	0.1	-0.8	-6.0	to	4.4	-6.7	-13.2	to	-0.1
QR (CT)	202	3.2	-4.1	to	10.5	2.8	-3.6	to	9.1	2.6	-4.2	to	9.4
RR (CC) ^e	46	-7.2	-28.1	to	13.8	-1.3	-16.7	to	14.1	-9.2	-31.5	to	13.1
P interaction ^f					0.749				0.927				0.815
PON1L55													
TT	65	-2.9	-17.0	to	11.3	-3.6	-16.1	to	9.0	-1.9	-14.7	to	11.0
AT	198	-5.6	-13.7	to	2.4	1.6	-17.8	to	8.1	-6.0	-17.8	to	1.6
AA	211	0.1	-6.2	to	6.5	-1.1	-6.3	to	4.0	0.2	-5.9	to	6.4
P interaction ^f					0.383				0.904				0.448
PON1-108													
TT	90	-5.2	-19.2	to	8.7	5.1	-6.9	to	17.1	-5.9	-18.6	to	6.7
CT	232	-0.1	-7.2	to	7.0	-0.2	-5.7	to	5.3	-0.4	-7.1	to	6.4
CC	152	-2.6	-9.8	to	4.6	-0.5	-6.6	to	5.5	-2.4	-9.3	to	4.6
P interaction ^f					0.757				0.860				0.656
PON1-909													
GG	107	-5.9	-17.8	to	6.0	-0.9	-10.7	to	9.0	-5.5	-16.5	to	5.4
CG	229	0.5	-6.4	to	7.4	1.7	-3.8	to	7.2	-0.1	-6.7	to	6.5
CC	138	-2.4	-10.1	to	5.4	-1.2	-7.8	to	5.4	-2.1	-9.5	to	5.4
P interaction ^f					0.644				0.883				0.584
PON1-161													
GG ^e	37	-11.9	-34.6	to	10.7	-16.8	-35.9	to	2.3	-9.3	-32.3	to	13.6
CG	172	-2.1	-9.7	to	5.5	4.6	-1.2	to	10.4	-3.8	-11.1	to	3.5
CC	265	-2.8	-9.1	to	3.5	-2.4	-7.8	to	2.9	-2.3	-8.2	to	3.6
P interaction ^f					0.831				0.676				0.870

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. BMI included as a continuous variable for PON1Q192 and PON1-161 because of missing levels in BMI for RR and GG.

f. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S7. Fully adjusted: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (**average pregnancy**) urine dialkyl phosphate metabolite concentration by **PON1 type** (N=474).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b				Diethyl alkyl phosphates ^c				Dimethyl alkyl phosphates ^d			
		Averaged across pregnancy				Averaged across pregnancy				Averaged across pregnancy			
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-2.6	-11.8	to	6.6	2.0	-4.8	to	8.8	-3.6	-12.5	to	5.2
QR (CT)	202	3.5	-6.2	to	13.1	6.8	-1.5	to	15.2	2.6	-6.5	to	11.7
RR (CC) ^e	46	-7.7	-35.9	to	20.6	4.3	-15.9	to	24.5	-11.6	-40.5	to	17.4
P interaction ^f					0.786				0.886				0.800
PON1L55													
TT	65	1.0	-18.4	to	20.4	1.2	-12.0	to	14.4	1.0	-18.4	to	20.5
AT	198	-5.0	-15.8	to	5.9	1.8	-20.7	to	10.2	-5.4	-20.7	to	4.8
AA	211	2.0	-6.5	to	10.5	4.8	-2.3	to	11.9	0.9	-7.2	to	9.0
P interaction ^f					0.675				0.721				0.724
PON1-108													
TT	90	-2.5	-20.1	to	15.0	6.3	-6.4	to	19.0	-4.9	-21.5	to	11.8
CT	232	2.3	-7.3	to	11.8	3.3	-4.3	to	10.8	1.3	-7.9	to	10.5
CC	152	-1.2	-11.4	to	9.1	3.5	-5.0	to	12.1	-1.6	-11.3	to	8.1
P interaction ^f					0.631				0.569				0.826
PON1-909													
GG	107	-5.1	-20.7	to	10.6	2.1	-8.9	to	13.1	-5.8	-20.7	to	9.1
CG	229	3.1	-6.2	to	12.4	3.4	-4.2	to	11.0	2.1	-6.8	to	11.0
CC	138	-0.7	-11.9	to	10.5	5.2	-3.9	to	14.3	-1.5	-12.1	to	9.1
P interaction ^f					0.763				0.888				0.891
PON1-161													
GG ^e	37	-0.4	-31.7	to	30.8	-4.3	-34.4	to	25.7	0.1	-28.7	to	28.9
CG	172	-5.1	-15.1	to	4.9	2.7	-5.7	to	11.1	-5.9	-15.3	to	3.5
CC	265	0.6	-8.2	to	9.3	3.9	-2.8	to	10.5	-0.7	-9.1	to	7.8
P interaction ^f					0.998				0.650				0.792

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP

e. BMI included as a continuous variable for PON1Q192 and PON1-161 because of missing levels in BMI for RR and GG.

f. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S8. Difference in child sex, maternal age, ethnicity, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal (<18 weeks) urine dialkyl phosphate metabolite concentration by PON1 type (N=474).

		N	Adjusted models ^a								
			Dialkyl phosphates (total) ^b			Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d		
			β	<18 weeks		β	<18 weeks		β	<18 weeks	
		(95% CI)		(95% CI)		(95% CI)					
PON1Q192											
	QQ (TT)	226	1.5	-4.6	to 7.5	4.9	-0.1	to 10.0	0.0	-5.8	to 5.8
	QR (CT)	202	-3.5	-9.7	to 2.6	-3.8	-7.5	to -0.1	-3.5	-9.4	to 2.4
	RR (CC)	46	-0.5	-16.6	to 15.5	0.9	-10.7	to 12.5	-0.6	-15.3	to 14.2
	P interaction ^e				0.361			0.039			0.537
PON1L55											
	TT	65	2.8	-8.7	to 14.4	2.6	-6.7	to 11.9	2.6	-8.4	to 13.6
	AT	198	-3.4	-10.2	to 3.5	-0.3	-13.5	to 5.0	-4.3	-13.5	to 2.3
	AA	211	-1.6	-7.5	to 4.4	-2.3	-5.9	to 1.4	-1.9	-7.5	to 3.8
	P interaction ^e				0.818			0.299			0.866
PON1-108											
	TT	90	-4.6	-14.5	to 5.3	0.6	-6.2	to 7.5	-6.8	-16.4	to 2.8
	CT	232	1.3	-5.0	to 7.7	2.3	-3.2	to 7.8	0.8	-5.3	to 6.9
	CC	152	-3.1	-9.8	to 3.6	-2.9	-6.6	to 0.9	-3.1	-9.5	to 3.3
	P interaction ^e				0.700			0.213			0.992
PON1-909											
	GG	107	-3.9	-13.5	to 5.6	0.0	-6.5	to 6.6	-5.9	-15.1	to 3.4
	CG	229	1.3	-4.9	to 7.5	1.8	-3.6	to 7.3	1.0	-5.0	to 6.9
	CC	138	-3.2	-10.5	to 4.2	-2.4	-6.3	to 1.5	-3.6	-10.6	to 3.4
	P interaction ^e				0.679			0.319			0.891
PON1-161											
	GG	37	4.0	-10.0	to 18.0	11.8	-2.9	to 26.6	3.8	-9.4	to 17.0
	CG	172	-2.2	-8.3	to 3.9	0.0	-5.4	to 5.4	-2.3	-8.2	to 3.5
	CC	265	-2.2	-8.3	to 3.8	-2.2	-5.7	to 1.3	-3.2	-9.0	to 2.6
	P interaction ^e				0.621			0.150			0.465

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S9. Difference in child sex, maternal age, ethnicity, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal (18-25 weeks) urine dialkyl phosphate metabolite concentration by PON1 type (N=474).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b 18-25 weeks				Diethyl alkyl phosphates ^c 18-25 weeks				Dimethyl alkyl phosphates ^d 18-25 weeks			
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	1.7	-4.9	to	8.3	1.5	-3.2	to	6.1	1.3	-5.1	to	7.7
QR (CT)	202	3.4	-3.9	to	10.7	2.3	-1.6	to	6.3	2.4	-4.5	to	9.3
RR (CC)	46	0.4	-16.2	to	16.9	0.5	-11.1	to	12.1	-1.0	-16.6	to	14.7
P interaction ^e					0.801				0.887				0.620
PON1L55													
TT	65	4.5	-8.1	to	17.1	4.4	-5.2	to	14.0	4.1	-8.1	to	16.3
AT	198	1.2	-6.0	to	8.4	0.1	-5.9	to	5.6	1.3	-5.9	to	8.2
AA	211	0.8	-6.4	to	8.0	2.2	-1.3	to	5.8	-0.9	-7.8	to	5.9
P interaction ^e					0.553				0.929				0.348
PON1-108													
TT	90	7.5	-4.1	to	19.2	6.2	-2.1	to	14.4	5.7	-5.6	to	17.0
CT	232	-0.6	-7.3	to	6.2	0.1	-3.7	to	4.0	-0.7	-7.1	to	5.8
CC	152	1.8	-5.5	to	9.2	3.8	-1.3	to	8.9	0.4	-6.8	to	7.6
P interaction ^e					0.353				0.864				0.279
PON1-909													
GG	107	4.2	-5.9	to	14.4	4.2	-3.2	to	11.6	2.8	-7.0	to	12.5
CG	229	0.1	-6.6	to	6.9	0.2	-3.6	to	4.0	0.1	-6.3	to	6.6
CC	138	2.5	-5.3	to	10.4	4.1	-1.3	to	9.6	0.8	-6.9	to	8.5
P interaction ^e					0.586				0.741				0.471
PON1-161													
GG	37	19.3	0.1	to	38.6	4.5	-6.6	to	15.7	17.9	-0.8	to	36.6
CG	172	-1.7	-8.9	to	5.6	1.2	-2.5	to	4.9	-1.6	-8.5	to	5.2
CC	265	3.2	-3.2	to	9.5	2.8	-1.9	to	7.5	2.2	-4.0	to	8.4
P interaction ^e					0.938				0.882				0.977

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S10. Difference in child sex, maternal age, ethnicity, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (>25 weeks) urine dialkyl phosphate metabolite concentration by **PON1 type** (N=474).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b				Diethyl alkyl phosphates ^c				Dimethyl alkyl phosphates ^d			
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-7.1	-13.6	to	-0.6	-0.5	-5.5	to	4.5	-7.3	-13.6	to	-0.9
QR (CT)	202	2.8	-3.9	to	9.4	2.7	-3.1	to	8.5	2.3	-3.9	to	8.5
RR (CC)	46	-5.4	-20.0	to	9.3	0.4	-9.2	to	9.9	-7.7	-23.2	to	7.8
P interaction ^e					0.548				0.849				0.637
PON1L55													
TT	65	-3.3	-15.3	to	8.8	-3.5	-13.3	to	6.4	-1.7	-13.1	to	9.7
AT	198	-5.1	-12.6	to	2.4	2.1	-18.1	to	8.2	-5.7	-18.1	to	1.4
AA	211	-0.1	-6.1	to	5.9	-0.4	-5.2	to	4.4	-0.2	-6.0	to	5.7
P interaction ^e					0.468				0.947				0.528
PON1-108													
TT	90	-5.5	-17.5	to	6.6	3.5	-5.9	to	12.8	-6.5	-17.7	to	4.8
CT	232	-1.3	-7.8	to	5.2	-0.3	-5.5	to	4.8	-1.4	-7.7	to	4.8
CC	152	-1.7	-8.3	to	5.0	1.0	-4.6	to	6.6	-1.7	-8.0	to	4.6
P interaction ^e					0.566				0.980				0.481
PON1-909													
GG	107	-7.1	-18.1	to	3.8	-0.6	-9.0	to	7.7	-7.3	-17.5	to	2.9
CG	229	-0.8	-7.2	to	5.6	1.3	-3.8	to	6.4	-1.2	-7.4	to	5.0
CC	138	-1.4	-8.5	to	5.7	0.4	-5.7	to	6.4	-1.4	-8.2	to	5.4
P interaction ^e					0.495				0.769				0.442
PON1-161													
GG	37	-0.4	-15.8	to	15.0	-4.0	-17.0	to	8.9	1.0	-14.2	to	16.3
CG	172	-2.5	-9.5	to	4.5	3.1	-2.2	to	8.3	-3.5	-10.2	to	3.2
CC	265	-3.5	-9.4	to	2.5	-1.2	-6.2	to	3.8	-3.3	-9.0	to	2.3
P interaction ^e					0.828				0.805				0.831

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S11. Difference in child sex, maternal age, ethnicity, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (average pregnancy) urine dialkyl phosphate metabolite concentration by PON1 type (N=474).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b				Diethyl alkyl phosphates ^c				Dimethyl alkyl phosphates ^d			
		Averaged across pregnancy				Averaged across pregnancy				Averaged across pregnancy			
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-3.4	-12.4	to	5.5	2.6	-3.9	to	9.2	-4.7	-13.2	to	3.8
QR (CT)	202	2.7	-6.2	to	11.5	6.0	-1.8	to	13.8	2.0	-6.3	to	10.3
RR (CC)	46	-5.0	-24.3	to	14.3	1.2	-12.1	to	14.5	-6.9	-26.6	to	12.7
P interaction ^e					0.966				0.988				0.970
PON1L55													
TT	65	-1.2	-18.3	to	15.9	1.0	-11.0	to	13.1	-0.8	-17.0	to	15.5
AT	198	-3.6	-13.6	to	6.4	3.5	-18.2	to	11.3	-4.7	-18.2	to	4.8
AA	211	-0.3	-8.3	to	7.6	2.6	-4.0	to	9.3	-1.0	-8.7	to	6.6
P interaction ^e					0.805				0.977				0.823
PON1-108													
TT	90	-3.2	-18.0	to	11.6	5.7	-4.8	to	16.1	-6.2	-20.5	to	8.0
CT	232	0.3	-8.7	to	9.3	2.9	-4.2	to	10.0	-0.5	-9.1	to	8.1
CC	152	-1.3	-10.2	to	7.5	2.7	-4.8	to	10.2	-1.5	-10.0	to	7.0
P interaction ^e					0.852				0.659				0.930
PON1-909													
GG	107	-4.6	-18.2	to	9.0	3.5	-6.1	to	13.0	-6.5	-19.5	to	6.6
CG	229	1.1	-7.6	to	9.8	3.0	-4.1	to	10.1	0.2	-8.1	to	8.5
CC	138	-0.8	-10.4	to	8.9	4.2	-3.6	to	12.1	-1.2	-10.4	to	8.0
P interaction ^e					0.994				0.984				0.849
PON1-161													
GG	37	7.5	-11.2	to	26.2	3.1	-14.3	to	20.5	8.7	-9.0	to	26.5
CG	172	-4.3	-13.3	to	4.8	1.7	-5.9	to	9.3	-4.6	-13.0	to	3.9
CC	265	-0.9	-9.4	to	7.5	4.1	-2.3	to	10.4	-2.4	-10.5	to	5.7
P interaction ^e					0.910				0.598				0.668

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S12. Difference in child sex, maternal age, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (<18 weeks) urine dialkyl phosphate metabolite concentration in Dutch women, by PON1 type (N=277).

		N	Adjusted models ^a											
			Dialkyl phosphates (total) ^b <18 weeks			Diethyl alkyl phosphates ^c <18 weeks			Dimethyl alkyl phosphates ^d <18 weeks					
			β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192														
	QQ (TT)	226	0.3	-7.9	to	8.4	5.5	-1.3	to	12.3	-1.6	-9.3	to	6.2
	QR (CT)	202	-3.3	-12.4	to	5.7	-4.5	-8.7	to	-0.2	-2.7	-11.2	to	5.9
	RR (CC)	46	-8.0	-42.0	to	26.1	0.2	-16.3	to	16.7	-11.2	-40.6	to	18.1
	P interaction ^e					0.768				0.104				0.921
PON1L55														
	TT	65	-0.4	-16.5	to	15.7	-0.8	-13.5	to	11.9	-0.7	-16.2	to	14.9
	AT	198	-0.4	-10.0	to	9.2	-0.2	-18.9	to	6.6	-1.4	-18.9	to	7.6
	AA	211	-5.4	-14.6	to	3.8	-3.2	-7.6	to	1.2	-5.9	-14.6	to	2.8
	P interaction ^e					0.579				0.502				0.572
PON1-108														
	TT	90	-5.8	-20.3	to	8.7	0.2	-8.2	to	8.5	-8.5	-22.4	to	5.4
	CT	232	1.6	-7.3	to	10.5	1.3	-6.2	to	8.7	1.3	-7.1	to	9.8
	CC	152	-5.3	-15.2	to	4.6	-3.9	-8.4	to	0.7	-5.1	-14.4	to	4.3
	P interaction ^e					0.715				0.280				0.987
PON1-909														
	GG	107	-4.7	-18.9	to	9.5	0.0	-8.1	to	8.1	-7.2	-21.0	to	6.5
	CG	229	3.6	-4.9	to	12.2	1.5	-6.0	to	9.1	3.5	-4.5	to	11.5
	CC	138	-8.1	-18.6	to	2.3	-3.9	-8.5	to	0.7	-8.4	-18.3	to	1.6
	P interaction ^e					0.533				0.295				0.717
PON1-161														
	GG	37	-2.3	-37.8	to	33.3	17.6	-25.4	to	60.6	0.8	-29.1	to	30.8
	CG	172	-1.3	-10.1	to	7.6	2.0	-5.2	to	9.2	-2.0	-10.4	to	6.4
	CC	265	-2.8	-11.1	to	5.4	-3.4	-7.5	to	0.6	-3.6	-11.4	to	4.2
	P interaction ^e					0.772				0.105				0.642

a. Adjusted for child sex, maternal age, and maternal education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S13. Difference in maternal age, child sex, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (18-25 weeks) urine dialkyl phosphate metabolite concentration in Dutch women, by PON1 type (N=277).

		N	Adjusted models ^a											
			Dialkyl phosphates (total) ^b			Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d					
			18-25 weeks			18-25 weeks			18-25 weeks					
		β	(95% CI)		β	(95% CI)		β	(95% CI)					
PON1Q192														
	QQ (TT)	226	1.5	-7.3	to	10.3	1.2	-4.9	to	7.3	1.2	-7.5	to	9.9
	QR (CT)	202	4.0	-6.0	to	14.0	2.1	-2.6	to	6.8	3.1	-6.2	to	12.5
	RR (CC)	46	1.0	-40.0	to	42.0	-0.2	-22.6	to	22.3	0.2	-42.8	to	43.3
	P interaction ^e					0.723				0.642				0.820
PON1L55														
	TT	65	13.2	-4.4	to	30.9	8.3	-4.3	to	20.8	12.3	-6.1	to	30.7
	AT	198	1.3	-8.4	to	10.9	-0.2	-10.3	to	7.2	1.8	-10.3	to	11.2
	AA	211	0.8	-9.8	to	11.3	2.1	-2.3	to	6.5	-0.9	-10.8	to	9.0
	P interaction ^e					0.417				0.922				0.301
PON1-108														
	TT	90	1.9	-12.5	to	16.4	3.1	-7.2	to	13.5	1.1	-13.3	to	15.5
	CT	232	2.9	-6.7	to	12.4	1.1	-3.2	to	5.3	2.3	-6.9	to	11.5
	CC	152	-1.3	-12.9	to	10.3	3.5	-4.9	to	11.9	-2.2	-13.3	to	8.9
	P interaction ^e					0.422				0.999				0.365
PON1-909														
	GG	107	3.4	-10.3	to	17.2	4.3	-5.4	to	14.0	2.4	-11.0	to	15.7
	CG	229	3.5	-5.7	to	12.6	0.9	-3.3	to	5.0	3.7	-5.2	to	12.6
	CC	138	-1.7	-14.6	to	11.1	3.5	-5.8	to	12.9	-3.1	-15.2	to	9.0
	P interaction ^e					0.403				0.816				0.349
PON1-161														
	GG	37	13.9	-25.1	to	53.0	1.4	-25.9	to	28.7	14.0	-21.5	to	49.5
	CG	172	-6.4	-15.9	to	3.1	0.6	-3.4	to	4.7	-6.2	-15.3	to	3.0
	CC	265	7.6	-1.2	to	16.5	4.8	-1.8	to	11.4	6.8	-1.9	to	15.4
	P interaction ^e					0.118				0.287				0.134

a. Adjusted for child sex, maternal age, and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S14. Difference in child sex, maternal age, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (>25 weeks) urine dialkyl phosphate metabolite concentration in Dutch women, by PON1 type (N=277).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b			Diethyl alkyl phosphates ^c			Dimethyl alkyl phosphates ^d					
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-5.9	-15.3	to	3.6	-0.9	-8.1	to	6.2	-6.6	-15.6	to	2.5
QR (CT)	202	1.7	-7.2	to	10.6	3.4	-4.4	to	11.2	1.0	-7.4	to	9.3
RR (CC)	46	-14.4	-44.9	to	16.1	-3.2	-17.5	to	11.0	-23.1	-66.5	to	20.3
P interaction ^e					0.541				0.592				0.626
PON1L55													
TT	65	-6.4	-23.5	to	10.6	8.7	-7.4	to	24.7	-7.7	-22.8	to	7.4
AT	198	-3.8	-14.9	to	7.3	1.7	-27.5	to	10.1	-4.7	-27.5	to	5.8
AA	211	1.1	-7.4	to	9.7	-0.6	-7.5	to	6.2	1.0	-7.2	to	9.2
P interaction ^e					0.500				0.302				0.355
PON1-108													
TT	90	-11.2	-27.9	to	5.5	8.2	-5.7	to	22.1	-13.3	-28.5	to	2.0
CT	232	4.2	-5.2	to	13.6	0.5	-6.3	to	7.3	3.1	-5.9	to	12.2
CC	152	-2.2	-12.2	to	7.9	-1.2	-10.0	to	7.5	-1.4	-10.8	to	8.1
P interaction ^e					0.782				0.238				0.480
PON1-909													
GG	107	-12.1	-27.5	to	3.4	3.7	-8.7	to	16.1	-13.4	-27.6	to	0.8
CG	229	5.3	-3.7	to	14.3	2.2	-4.5	to	8.9	4.1	-4.6	to	12.7
CC	138	-3.6	-14.4	to	7.1	-4.3	-13.9	to	5.4	-2.5	-12.5	to	7.6
P interaction ^e					0.760				0.247				0.479
PON1-161													
GG	37	-5.1	-43.1	to	33.0	-10.8	-39.0	to	17.5	-2.8	-41.7	to	36.1
CG	172	-5.1	-13.9	to	3.6	-0.7	-7.7	to	6.3	-5.7	-14.1	to	2.7
CC	265	2.2	-6.8	to	11.1	3.4	-3.7	to	10.5	1.0	-7.4	to	9.4
P interaction ^e					0.267				0.145				0.342

a. Adjusted for child sex, maternal age, and education (low, intermediate, and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S15. Difference in child sex, maternal age, and educational level adjusted child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal (average pregnancy) urine dialkyl phosphate metabolite concentration in Dutch women, by PON1 type (N=277).

	N	Adjusted models ^a											
		Dialkyl phosphates (total) ^b				Diethyl alkyl phosphates ^c				Dimethyl alkyl phosphates ^d			
		Averaged across pregnancy				Averaged across pregnancy				Averaged across pregnancy			
		β	(95% CI)		β	(95% CI)		β	(95% CI)				
PON1Q192													
QQ (TT)	226	-3.4	-16.7	to	9.8	3.6	-5.6	to	12.8	-5.7	-18.3	to	6.9
QR (CT)	202	2.7	-9.8	to	15.1	7.2	-3.1	to	17.4	1.9	-9.7	to	13.4
RR (CC)	46	-15.2	-57.1	to	26.8	-1.1	-22.9	to	20.8	-22.7	-72.4	to	27.0
P interaction ^e					0.716				0.636				0.708
PON1L55													
TT	65	-4.2	-32.9	to	24.6	7.8	-10.8	to	26.4	-8.4	-36.7	to	20.0
AT	198	-0.4	-15.1	to	14.4	4.0	-29.4	to	14.6	-1.5	-29.4	to	12.2
AA	211	-0.5	-12.7	to	11.7	5.8	-4.0	to	15.5	-1.9	-13.4	to	9.6
P interaction ^e					0.961				0.988				0.900
PON1-108													
TT	90	-9.7	-30.9	to	11.5	7.2	-7.0	to	21.5	-13.4	-33.2	to	6.4
CT	232	7.3	-6.6	to	21.2	5.1	-4.6	to	14.8	5.8	-7.6	to	19.1
CC	152	-3.8	-17.4	to	9.8	2.2	-9.6	to	14.0	-3.6	-16.2	to	9.0
P interaction ^e					0.807				0.409				0.912
PON1-909													
GG	107	-9.1	-29.4	to	11.2	7.5	-5.8	to	20.9	-12.1	-31.1	to	7.0
CG	229	10.6	-2.5	to	23.6	4.3	-5.4	to	13.9	9.3	-3.2	to	21.8
CC	138	-7.0	-21.6	to	7.7	2.4	-10.1	to	15.0	-6.7	-20.3	to	6.8
P interaction ^e					0.706				0.439				0.928
PON1-161													
GG	37	-1.0	-46.1	to	44.0	-5.1	-52.8	to	42.6	2.9	-35.5	to	41.2
CG	172	-8.6	-21.5	to	4.4	0.1	-9.7	to	9.8	-9.0	-21.1	to	3.2
CC	265	6.1	-6.4	to	18.7	8.8	-0.3	to	17.8	3.8	-8.1	to	15.7
P interaction ^e					0.233				0.141				0.368

a. Adjusted for child sex, maternal age, education (low, intermediate and high).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

d. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

e. P-value based on interaction where the PON-1 type was treated as an ordinal variable.

Table S16. Concentrations <LOD substituted with LOD/ $\sqrt{2}$: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration ^a, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	Type of adjustment									
	β	None (95% CI)		β	Adjusted ^b (95% CI)		β	Mutually adjusted ^c (95% CI)		
Dialkyl phosphates (total) ^d										
< 18 weeks' gestation	-0.6	-4.1	to 2.9	-1.9	-5.3	to 1.5	-1.8	-5.3	to 1.7	
18 – 25 weeks' gestation	3.2	-0.6	to 7.0	0.9	-2.9	to 4.7	2.6	-1.4	to 6.7	
> 25 weeks' gestation	-0.8	-4.5	to 2.8	-3.9	-7.5	to -0.3	-4.3	-8.1	to -0.6	
Mean of three urines	0.6	-4.4	to 5.5	-2.5	-7.4	to 2.4				
Diethyl alkyl phosphates ^e										
< 18 weeks' gestation	2.5	-0.4	to 5.5	0.5	-2.4	to 3.4	0.5	-2.5	to 3.5	
18 – 25 weeks' gestation	2.7	-0.2	to 5.7	0.4	-2.5	to 3.3	0.4	-2.7	to 3.5	
> 25 weeks' gestation	2.6	-0.4	to 5.5	-0.3	-3.3	to 2.6	-0.5	-3.5	to 2.5	
Mean of three urines	4.3	0.5	to 8.2	1.0	-2.9	to 4.8				
Dimethyl alkyl phosphates ^f										
< 18 weeks' gestation	-1.6	-4.9	to 1.8	-2.4	-5.7	to 0.8	-2.3	-5.7	to 1.0	
18 – 25 weeks' gestation	2.7	-1.0	to 6.4	0.7	-2.9	to 4.3	2.4	-1.4	to 6.2	
> 25 weeks' gestation	-1.5	-5.0	to 1.9	-4.1	-7.5	to -0.6	-4.3	-7.9	to -0.8	
Mean of three urines	-0.6	-5.4	to 4.1	-3.0	-7.7	to 1.7				

a. Values below the limit of detection (LOD) substituted by the LOD/ $\sqrt{2}$.

b. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

c. Adjusted model with the inclusion of the three exposures in one model.

d. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

e. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

f. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S17. Creatinine adjustment as separate covariate: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	Type of adjustment					
	None ^a		Adjusted ^b		Mutually adjusted ^c	
	β	(95% CI)	β	(95% CI)	β	(95% CI)
Dialkyl phosphates (total) ^d						
< 18 weeks' gestation	-1.8	-5.1 to 1.5	-2.4	-5.5 to 0.8	-2.5	-5.7 to 0.7
18 – 25 weeks' gestation	3.2	-0.3 to 6.6	0.9	-2.5 to 4.3	2.7	-0.8 to 6.3
> 25 weeks' gestation	-1.8	-5.3 to 1.6	-3.9	-7.3 to -0.5	-4.5	-8.0 to -1.0
Mean of three urines	-0.7	-5.5 to 4.1	-2.6	-7.3 to 2.1		
Diethyl alkyl phosphates ^e						
< 18 weeks' gestation	-0.4	-2.8 to 2.1	-1.6	-4.0 to 0.9	-1.6	-4.1 to 0.8
18 – 25 weeks' gestation	2.3	-0.1 to 4.8	0.6	-1.9 to 3.0	1.0	-1.5 to 3.5
> 25 weeks' gestation	1.6	-0.9 to 4.1	-0.5	-3.0 to 2.0	-0.6	-3.1 to 2.0
Mean of three urines	3.0	-0.6 to 6.7	0.5	-3.2 to 4.1		
Dimethyl alkyl phosphates ^f						
< 18 weeks' gestation	-2.5	-5.7 to 0.6	-2.8	-5.8 to 0.2	-2.9	-6.0 to 0.1
18 – 25 weeks' gestation	2.7	-0.6 to 6.1	0.7	-2.6 to 4.0	2.6	-0.8 to 6.0
> 25 weeks' gestation	-2.4	-5.7 to 0.9	-4.0	-7.3 to -0.8	-4.6	-7.9 to -1.3
Mean of three urines	-1.9	-6.6 to 2.7	-3.3	-7.8 to 1.3		

a. "None" adjusted model is adjusted for creatinine concentrations.

b. Adjusted for creatinine concentrations, child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

c. Adjusted model with the inclusion of the three exposures in one model.

d. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

e. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

f. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S18. Removal of extreme values: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment.

Dialkyl Phosphate Type	Type of adjustment					
	None		Adjusted ^a		Mutually adjusted ^b	
	β	(95% CI)	β	(95% CI)	β	(95% CI)
Dialkyl phosphates (total) ^c						
< 18 weeks' gestation (n=639)	1.2	-2.1 to 4.4	-0.5	-3.7 to 2.7	-0.5	-3.6 to 2.7
18 – 25 weeks' gestation (n=638)	2.4	-1.2 to 5.9	0.6	-2.9 to 4.2	2.9	-0.7 to 6.4
> 25 weeks' gestation (n=640)	0.3	-3.0 to 3.7	-2.8	-6.2 to 0.6	-2.8	-6.2 to 0.6
Mean of three urines (n=639)	3.5	-1.2 to 8.1	0.4	-4.4 to 5.1		
Diethyl alkyl phosphates ^d						
< 18 weeks' gestation (n=638)	2.1	-0.7 to 4.9	-0.2	-3.0 to 2.6	0.7	-2.0 to 3.4
18 – 25 weeks' gestation (n=639)	1.5	-0.7 to 3.8	0.2	-2.0 to 2.5	0.0	-2.3 to 2.3
> 25 weeks' gestation (n=640)	1.8	-0.4 to 4.1	-0.3	-2.6 to 2.0	-1.2	-3.5 to 1.0
Mean of three urines (n=638)	2.1	-1.4 to 5.7	-1.0	-4.7 to 2.6		
Dimethyl alkyl phosphates ^e						
< 18 weeks' gestation (n=640)	0.5	-2.6 to 3.6	-0.8	-3.8 to 2.3	-0.9	-3.9 to 2.1
18 – 25 weeks' gestation (n=638)	1.8	-1.6 to 5.2	0.5	-2.9 to 3.9	2.5	-0.9 to 5.9
> 25 weeks' gestation (n=640)	-0.2	-3.4 to 3.0	-2.7	-6.0 to 0.5	-2.9	-6.2 to 0.4
Mean of three urines (n=638)	2.3	-2.2 to 6.8	0.0	-4.5 to 4.6		

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S19. Adjustment for prenatal fruit and vegetable consumption: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	Type of adjustment									
	β	None (95% CI)		β	Adjusted ^a (95% CI)		β	Mutually adjusted ^b (95% CI)		
Dialkyl phosphates (total) ^c										
< 18 weeks' gestation	-0.7	-4.1	to 2.8	-2.5	-5.9	to 1.0	-2.4	-5.9	to 1.2	
18 – 25 weeks' gestation	3.2	-0.6	to 7.0	0.8	-3.1	to 4.6	2.5	-1.5	to 6.6	
> 25 weeks' gestation	-0.8	-4.4	to 2.8	-4.0	-7.6	to -0.3	-4.3	-8.1	to -0.5	
Mean of three urines	0.6	-4.3	to 5.5	-2.9	-7.9	to 2.0				
Diethyl alkyl phosphates ^d										
< 18 weeks' gestation	0.1	-2.4	to 2.6	-1.6	-4.1	to 0.9	-1.7	-4.3	to 0.8	
18 – 25 weeks' gestation	2.1	-0.4	to 4.7	0.5	-2.0	to 3.0	0.9	-1.7	to 3.5	
> 25 weeks' gestation	2.2	-0.3	to 4.7	-0.1	-2.7	to 2.4	-0.1	-2.8	to 2.5	
Mean of three urines	4.4	0.6	to 8.2	0.9	-3.0	to 4.8				
Dimethyl alkyl phosphates ^e										
< 18 weeks' gestation	-1.6	-4.9	to 1.7	-3.1	-6.3	to 0.2	-2.9	-6.2	to 0.4	
18 – 25 weeks' gestation	2.6	-1.0	to 6.3	0.5	-3.2	to 4.1	2.2	-1.6	to 6.0	
> 25 weeks' gestation	-1.6	-5.0	to 1.9	-4.2	-7.6	to -0.7	-4.3	-7.9	to -0.8	
Mean of three urines	-0.6	-5.4	to 4.1	-3.5	-8.3	to 1.3				

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy), fruit consumption in grams, vegetables consumption in grams, and energy intake in kcal.

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S20. Multiple informants model: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling (N=708).

Dialkyl Phosphate Type	Estimates based on the multiple informants approach ^a		
	β	(95% CI)	
Dialkyl phosphates (total) ^b			
< 18 weeks' gestation	-2.0	-5.3 to 1.4	
18 – 25 weeks' gestation	0.8	-2.9 to 4.5	
> 25 weeks' gestation	-4.0	-7.5 to -0.4	
p homogeneity ^c			0.049
Diethyl alkyl phosphates ^d			
< 18 weeks' gestation	-1.4	-3.9 to 1.0	
18 – 25 weeks' gestation	0.6	-1.9 to 3.0	
> 25 weeks' gestation	-0.2	-2.7 to 2.3	
p homogeneity ^c			0.722
Dimethyl alkyl phosphates ^e			
< 18 weeks' gestation	-2.5	-5.7 to 0.6	
18 – 25 weeks' gestation	0.6	-3.0 to 4.1	
> 25 weeks' gestation	-4.2	-7.5 to -0.8	
p homogeneity ^c			0.020

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

c. Tests whether the exposure from different time points relates in the same manner to non-verbal IQ scores.

d. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S21. Effect measure modification by maternal education: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling, degree of adjustment, and **maternal education level** (N=708).

Total Dialkyl phosphates ^a	Educational level						P interaction
	High		Middle		Low		
Type of adjustment	B	95%CI	B	95%CI	B	95%CI	
None							
< 18 weeks' gestation	0.0	-5.0 to 5.0	-6.1	-12.1 to -0.2	1.0	-6.8 to 8.9	0.836
18 – 25 weeks' gestation	2.0	-3.4 to 7.3	-1.4	-8.1 to 5.2	2.3	-6.5 to 11.0	0.796
> 25 weeks' gestation	-6.1	-11.2 to -1.0	-1.3	-7.4 to 4.8	-1.8	-10.2 to 6.6	0.341
Mean of three urines	-2.7	-9.8 to 4.5	-4.8	-13.2 to 3.5	1.2	-10.0 to 12.3	0.745
Adjusted ^b							
< 18 weeks' gestation	-1.2	-6.3 to 3.9	-7.3	-13.7 to -0.9	2.7	-6.7 to 12.1	0.675
18 – 25 weeks' gestation	1.3	-4.1 to 6.7	-1.1	-8.4 to 6.1	1.8	-9.3 to 12.8	0.944
> 25 weeks' gestation	-5.8	-11.0 to -0.7	-3.9	-10.6 to 2.8	-0.2	-10.6 to 10.2	0.241
Mean of three urines	-3.5	-10.8 to 3.9	-7.3	-16.5 to 1.9	3.4	-10.4 to 17.1	0.398
Mutually adjusted ^c							
< 18 weeks' gestation	-0.9	-6.1 to 4.3	-7.2	-13.8 to -0.7	2.5	-7.6 to 12.7	0.700
18 – 25 weeks' gestation	3.3	-2.3 to 8.9	1.7	-6.0 to 9.3	0.9	-11.3 to 13.2	0.986
> 25 weeks' gestation	-6.5	-11.9 to -1.2	-3.5	-10.5 to 3.4	-0.8	-11.8 to 10.1	0.257

a. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

b. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

c. Adjusted model with the inclusion of the three exposures in one model.

Table S22. Effect measure modification by child sex: Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling, degree of adjustment, and **child sex** (N=708).

Dialkyl phosphates (total) ^a	Child sex				P interaction
	Boys		Girls		
Type of adjustment	B	95%CI	B	95%CI	
None					
< 18 weeks' gestation	-0.4	-5.5 to 4.7	-1.1	-5.9 to 3.6	0.844
18 – 25 weeks' gestation	1.9	-3.6 to 7.3	4.5	-0.8 to 9.8	0.499
> 25 weeks' gestation	0.0	-5.4 to 5.4	-1.7	-6.5 to 3.1	0.651
Mean of three urines	0.5	-6.6 to 7.6	0.3	-6.4 to 7.1	0.976
Adjusted ^b					
< 18 weeks' gestation	-2.0	-7.2 to 3.2	-1.8	-6.3 to 2.8	0.840
18 – 25 weeks' gestation	-0.3	-5.9 to 5.2	2.1	-3.3 to 7.4	0.619
> 25 weeks' gestation	-3.0	-8.5 to 2.4	-5.3	-10.2 to -0.3	0.626
Mean of three urines	-2.6	-9.9 to 4.7	-2.7	-9.5 to 4.2	0.979
Mutually adjusted ^c					
< 18 weeks' gestation	-1.8	-7.3 to 3.7	-1.6	-6.2 to 3.0	0.751
18 – 25 weeks' gestation	0.9	-5.0 to 6.8	4.6	-1.0 to 10.2	0.550
> 25 weeks' gestation	-3.0	-8.6 to 2.7	-6.5	-11.7 to -1.3	0.566

a. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

b. Adjusted for maternal age, ethnicity categories (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), Home IT quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

c. Adjusted model with the inclusion of the three exposures in one model.

Table S23. Complete-case only model (with the exclusion of IT-Home score): Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling, and degree of adjustment, among mother-child pairs with complete covariate data.

Dialkyl Phosphate Type	Type of adjustment									
	None (n=708)			Adjusted (n=541) ^a			Mutually adjusted (n=541) ^b			
	β	(95% CI)		β	(95% CI)		β	(95% CI)		
Dialkyl phosphates (total) ^c										
< 18 weeks' gestation	-0.7	-4.2	to 2.8	-2.3	-6.1	to 1.5	-2.3	-6.2	to 1.6	
18 – 25 weeks' gestation	3.2	-0.6	to 7.0	1.1	-3.3	to 5.4	2.7	-1.8	to 7.2	
> 25 weeks' gestation	-0.9	-4.5	to 2.7	-3.9	-8.1	to 0.4	-4.2	-8.6	to 0.2	
Mean of three urines	0.6	-4.4	to 5.5	-2.5	-8.1	to 3.2				
Diethyl alkyl phosphates ^d										
< 18 weeks' gestation	0.1	-2.4	to 2.6	-2.0	-4.6	to 0.6	-2.2	-4.9	to 0.5	
18 – 25 weeks' gestation	2.2	-0.4	to 4.7	1.1	-1.7	to 3.8	1.3	-1.5	to 4.2	
> 25 weeks' gestation	2.2	-0.3	to 4.7	0.4	-2.9	to 3.7	0.4	-2.9	to 3.8	
Mean of three urines	0.6	-4.4	to 5.5	1.4	-2.9	to 5.8				
Dimethyl alkyl phosphates ^e										
< 18 weeks' gestation	-1.7	-5.0	to 1.6	-2.6	-6.3	to 1.0	-2.6	-6.2	to 1.1	
18 – 25 weeks' gestation	2.6	-1.0	to 6.3	0.5	-3.6	to 4.6	2.1	-2.2	to 6.4	
> 25 weeks' gestation	-1.6	-5.1	to 1.8	-4.3	-8.3	to -0.3	-4.5	-8.6	to -0.4	
Mean of three urines	0.6	-4.4	to 5.5	-3.1	-8.6	to 2.3				

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal non-verbal IQ, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S24. Complete-case only model (with the inclusion of IT-Home score): Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling, and degree of adjustment, among mother-child pairs with complete covariate data.

Dialkyl Phosphate Type	Type of adjustment					
	None (n=708)		Adjusted (n=384) ^a		Mutually adjusted (n=384) ^b	
	β	(95% CI)	β	(95% CI)	β	(95% CI)
Dialkyl phosphates (total)^c						
< 18 weeks' gestation	-0.7	-4.2 to 2.8	-0.5	-5.1 to 4.0	-1.0	-5.7 to 3.6
18 – 25 weeks' gestation	3.2	-0.6 to 7.0	3.3	-1.7 to 8.4	4.4	-0.9 to 9.6
> 25 weeks' gestation	-0.9	-4.5 to 2.7	-2.5	-7.4 to 2.4	-3.4	-8.4 to 1.6
Mean of three urines	0.6	-4.4 to 5.5	0.9	-5.8 to 7.5		
Diethyl alkyl phosphates^d						
< 18 weeks' gestation	0.1	-2.4 to 2.6	-1.7	-4.6 to 1.3	-1.9	-4.8 to 1.1
18 – 25 weeks' gestation	2.2	-0.4 to 4.7	1.7	-1.5 to 4.8	1.9	-1.3 to 5.1
> 25 weeks' gestation	2.2	-0.3 to 4.7	0.1	-3.7 to 4.0	-0.1	-4.0 to 3.8
Mean of three urines	0.6	-4.4 to 5.5	0.9	-5.8 to 7.5		
Dimethyl alkyl phosphates^e						
< 18 weeks' gestation	-1.7	-5.0 to 1.6	-1.1	-5.5 to 3.4	-1.3	-5.8 to 3.1
18 – 25 weeks' gestation	2.6	-1.0 to 6.3	2.7	-2.2 to 7.5	3.6	-1.4 to 8.6
> 25 weeks' gestation	-1.6	-5.1 to 1.8	-2.7	-7.3 to 2.0	-3.3	-8.1 to 1.5
Mean of three urines	0.6	-4.4 to 5.5	0.9	-5.8 to 7.5		

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal non-verbal IQ, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S25. Excluding DEDTP (i.e., including only those metabolites with at least 80% of values >LOD): Difference in child nonverbal IQ test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	Type of adjustment									
	β	None (95% CI)		β	Adjusted ^a (95% CI)		β	Mutually adjusted ^b (95% CI)		
Dialkyl phosphates (total) ^c										
< 18 weeks' gestation	-0.7	-4.2	to 2.8	-1.9	-5.3	to 1.5	-1.9	-5.3	to 1.6	
18 – 25 weeks' gestation	3.2	-0.6	to 7.0	0.9	-2.9	to 4.7	2.6	-1.4	to 6.6	
> 25 weeks' gestation	-0.8	-4.4	to 2.8	-3.9	-7.5	to -0.3	-4.3	-8.1	to -0.6	
Mean of three urines	0.6	-4.3	to 5.5	-2.5	-7.4	to 2.4				
Diethyl alkyl phosphates ^d										
< 18 weeks' gestation	0.1	-2.4	to 2.6	-1.4	-3.9	to 1.0	-1.6	-4.1	to 0.9	
18 – 25 weeks' gestation	2.1	-0.4	to 4.6	0.5	-2.0	to 3.0	0.9	-1.7	to 3.4	
> 25 weeks' gestation	2.2	-0.3	to 4.7	-0.2	-2.8	to 2.3	-0.3	-2.8	to 2.3	
Mean of three urines	4.4	0.6	to 8.2	1.0	-2.8	to 4.9				
Dimethyl alkyl phosphates ^e										
< 18 weeks' gestation	-1.6	-4.9	to 1.7	-2.5	-5.7	to 0.7	-2.3	-5.6	to 0.9	
18 – 25 weeks' gestation	2.6	-1.0	to 6.3	0.7	-3.0	to 4.3	2.3	-1.4	to 6.1	
> 25 weeks' gestation	-1.6	-5.0	to 1.9	-4.1	-7.5	to -0.7	-4.3	-7.9	to -0.8	
Mean of three urines	-0.6	-5.4	to 4.1	-3.0	-7.7	to 1.7				

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DETP, DEP, DMDTP, DMTP and DMP.

d. Diethyl alkyl phosphates is the sum of DETP and DEP.

e. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S26. Difference in **Mosaics** test score at age 6 years (and 95% confidence interval) per log10 nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	β	Type of adjustment							
		None		Adjusted ^a		Mutually adjusted ^b			
		(95% CI)		(95% CI)		(95% CI)			
Dialkyl phosphates (total) ^c									
< 18 weeks' gestation	-1.3	-4.9	to 2.3	-3.1	-6.5	to 0.4	-3.0	-6.6	to 0.6
18 – 25 weeks' gestation	2.7	-1.2	to 6.7	0.1	-3.7	to 4.0	1.8	-2.3	to 5.9
> 25 weeks' gestation	0.2	-3.6	to 3.9	-3.3	-7.0	to 0.4	-3.3	-7.2	to 0.5
Mean of three urines	0.5	-4.7	to 5.6	-3.4	-8.5	to 1.6			
p homogeneity ^d									0.110
Diethyl alkyl phosphates ^e									
< 18 weeks' gestation	0.5	-2.1	to 3.2	-1.2	-3.7	to 1.3	-1.5	-4.1	to 1.1
18 – 25 weeks' gestation	2.8	0.1	to 5.4	1.0	-1.5	to 3.6	1.2	-1.5	to 3.8
> 25 weeks' gestation	3.7	1.0	to 6.3	0.9	-1.7	to 3.4	0.8	-1.9	to 3.4
Mean of three urines	5.7	1.7	to 9.6	1.6	-2.3	to 5.6			
p homogeneity ^d									0.457
Dimethyl alkyl phosphates ^f									
< 18 weeks' gestation	-2.2	-5.6	to 1.3	-3.6	-6.9	to -0.3	-3.4	-6.7	to 0.0
18 – 25 weeks' gestation	2.2	-1.6	to 6.1	0.0	-3.7	to 3.7	1.8	-2.0	to 5.7
> 25 weeks' gestation	-1.1	-4.7	to 2.5	-3.9	-7.4	to -0.4	-3.9	-7.6	to -0.3
Mean of three urines	-1.1	-6.0	to 3.9	-4.1	-9.0	to 0.7			
p homogeneity ^d									0.039

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Multiple-partial F test used to test whether exposure from different time points relates in the same manner to Mosaics scores.

e. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

f. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Table S27. Difference in **Categories** test score at age 6 years (and 95% confidence interval) per log₁₀ nmol/g creatinine increase in maternal urine dialkyl phosphate metabolite concentration, by timing of pregnancy urine sampling and degree of adjustment (N=708).

Dialkyl Phosphate Type	β	Type of adjustment							
		None		Adjusted ^a		Mutually adjusted ^b			
		(95% CI)		(95% CI)		(95% CI)			
Dialkyl phosphates (total)^c									
< 18 weeks' gestation	0.6	-2.9	to 4.1	0.6	-2.9	to 4.2	0.4	-3.3	to 4.1
18 – 25 weeks' gestation	3.0	-0.8	to 6.8	2.4	-1.5	to 6.3	3.3	-0.9	to 7.4
> 25 weeks' gestation	-1.4	-4.9	to 2.2	-2.4	-6.1	to 1.4	-3.3	-7.2	to 0.6
Mean of three urines	1.2	-3.7	to 6.1	0.9	-4.2	to 6.0			
p homogeneity ^d									0.128
Diethyl alkyl phosphates^e									
< 18 weeks' gestation	-0.5	-3.0	to 2.1	-1.0	-3.6	to 1.5	-1.1	-3.7	to 1.5
18 – 25 weeks' gestation	1.1	-1.5	to 3.6	0.4	-2.2	to 3.0	0.8	-1.9	to 3.5
> 25 weeks' gestation	0.0	-2.6	to 2.5	-0.9	-3.6	to 1.7	-1.0	-3.7	to 1.7
Mean of three urines	1.7	-2.2	to 5.5	0.6	-3.4	to 4.6			
p homogeneity ^d									0.520
Dimethyl alkyl phosphates^f									
< 18 weeks' gestation	-0.1	-3.4	to 3.2	0.2	-3.2	to 3.5	0.1	-3.4	to 3.5
18 – 25 weeks' gestation	2.6	-1.0	to 6.3	2.0	-1.8	to 5.8	2.8	-1.2	to 6.7
> 25 weeks' gestation	-1.3	-4.8	to 2.1	-2.1	-5.7	to 1.5	-2.8	-6.5	to 0.9
Mean of three urines	0.8	-3.9	to 5.5	0.8	-4.1	to 5.7			
p homogeneity ^d									0.200

a. Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

b. Adjusted model with the inclusion of the three exposures in one model.

c. Total dialkyl phosphates is the sum of DEDTP, DETP, DEP, DMDTP, DMTP and DMP.

d. Multiple-partial F test used to test whether exposure from different time points relates in the same manner to Categories scores.

e. Diethyl alkyl phosphates is the sum of DEDTP, DETP and DEP.

f. Dimethyl alkyl phosphates is the sum of DMDTP, DMTP and DMP.

Figure S1. Restricted cubic spline (and 95% confidence interval) of adjusted child nonverbal IQ scores and (untransformed) total dialkyl phosphate concentrations, by timing of pregnancy urine sampling (n=708). Adjusted for child sex, maternal age, ethnicity

(Dutch, other-western, and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

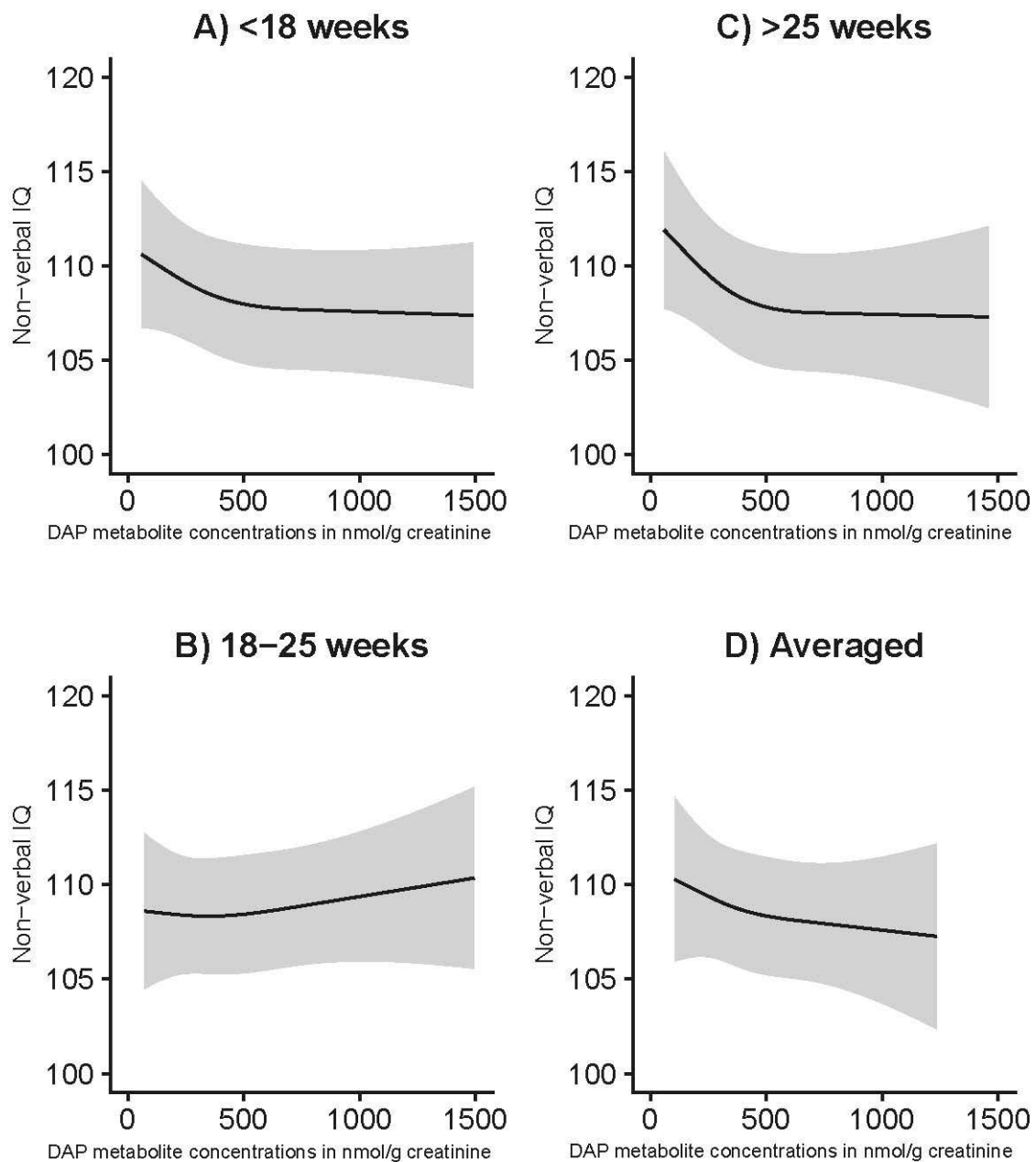


Figure S2. Restricted cubic spline (and 95% confidence interval) of adjusted child nonverbal IQ scores and (untransformed) diethyl alkyl phosphate concentrations, by timing of pregnancy urine sampling (n=708). Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

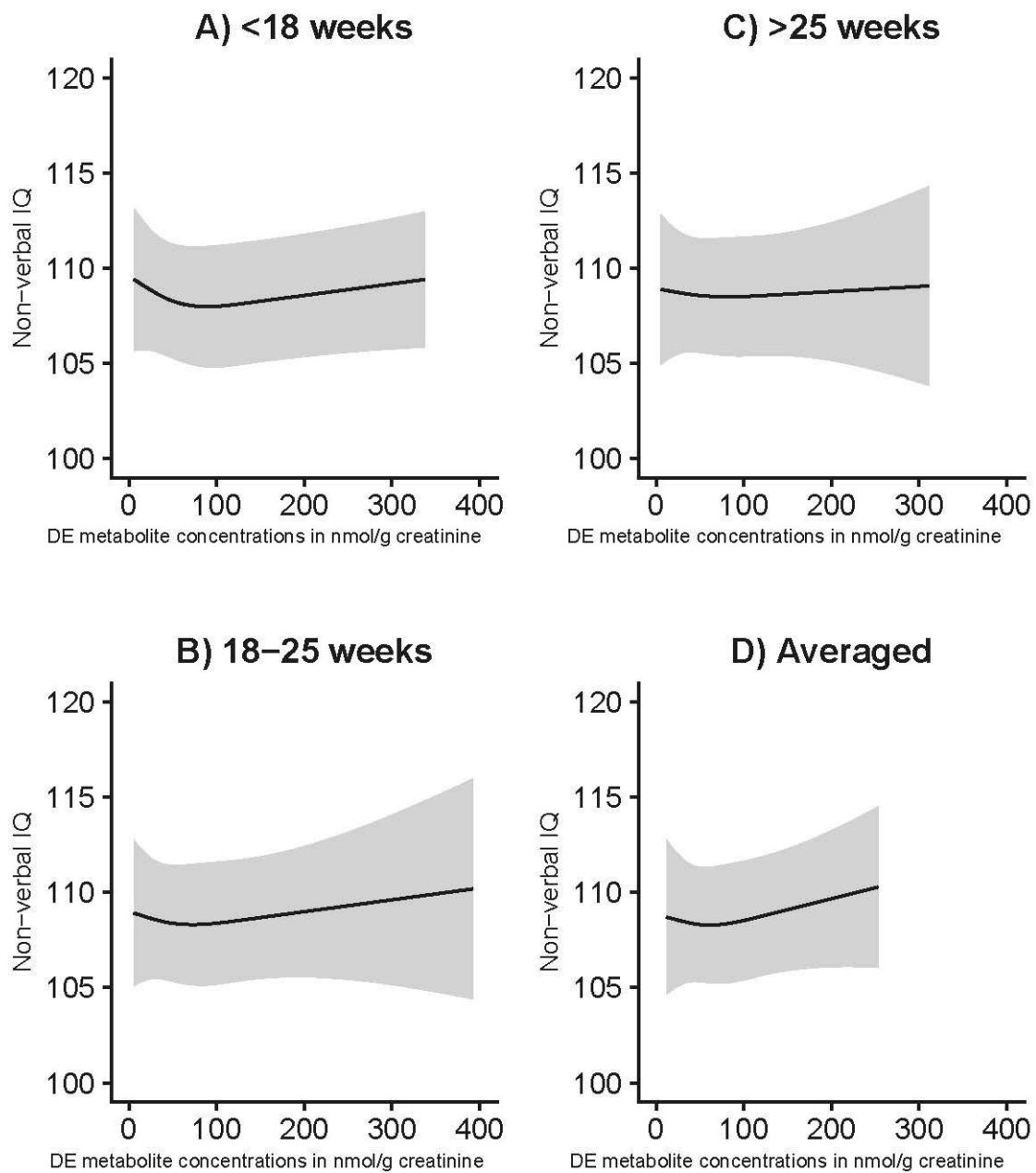


Figure S3. Restricted cubic spline (and 95% confidence interval) of adjusted child nonverbal IQ scores and (untransformed) dimethyl alkyl phosphate concentrations, by timing of pregnancy urine sampling (n=708). Adjusted for child sex, maternal age, ethnicity (Dutch, other-western and non-western), education (low, intermediate, and high), income (low, middle, and high), marital status, maternal alcohol consumption (no alcohol consumption during pregnancy, alcohol consumption until pregnancy was known, occasional alcohol consumption during pregnancy, and frequent alcohol consumption during pregnancy), maternal non-verbal IQ, BMI categories (<18.5, 18.5-25, 25-30, and 30+), height of the mother, parity categories (0, 1, and 2+), IT-Home quartiles, and smoking categories (no smoking during pregnancy, smoked until pregnancy was known, and smoked during pregnancy).

