Environ Health Perspect

DOI: 10.1289/EHP604

Note to readers with disabilities: *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to <u>508 standards</u> due to the complexity of the information being presented. If you need assistance accessing journal content, please contact <u>ehp508@niehs.nih.gov</u>. Our staff will work with you to assess and meet your accessibility needs within 3 working days.

Supplemental Material

Combined Prenatal Pesticide Exposure and Folic Acid Intake in Relation to Autism Spectrum Disorder

Rebecca J. Schmidt, Ph.D., Vladimir Kogan, Janie F. Shelton, Ph.D., Lora Delwiche, Ph.D., Robin L. Hansen, M.D., Sally Ozonoff, Ph.D., Claudia C. Ma, M.S., M.P.H., Erin C. McCanlies, Ph.D., Deborah H. Bennett, Ph.D., Irva Hertz-Picciotto, Ph.D., M.P.H., Daniel Tancredi, Ph.D., Heather E. Volk, Ph.D., M.P.H.

Table of Contents

TABLE S1. Combinations of Household Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) in Fully-Adjusted Models

TABLE S2. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) in Fully-Adjusted Models

TABLE S3. Combinations of Household Pesticide Exposure Including Flea and Tick Pet Collars and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

TABLE S4. Combinations of Household Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) with Folic Acid (FA) Dichotomized at 600 µg

TABLE S5. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) with Folic Acid (FA) Dichotomized at 600 µg

TABLE S6. Combinations of Agricultural Pesticide Exposure During Pregnancy and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

TABLE S7. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1500 m Buffer

TABLE S8. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1750 m Buffer

TABLE S9. AIC ^a for Assessing Goodness of Fit for Models with and without Multiplicative Interaction Terms

TABLE S10. Combinations of Household Pesticide Exposure and Maternal Vitamin B12 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

TABLE S11. Combinations of Agricultural Pesticide Exposure and Maternal Vitamin B12 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1250 m Buffer

TABLE S12. Combinations of Household Pesticide Exposure and Maternal Vitamin B6 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

TABLE S13. Combinations of Agricultural Pesticide Exposure and Maternal Vitamin B6 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1250 m Buffer

TABLE S14. Combinations of Household Pesticide Exposure and Maternal Folic Acid and Vitamin B6 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

TABLE S15. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid and Vitamin B6 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1250 m Buffer

TABLE S16. Combinations of Household, Agricultural, and Occupational Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

Pesticide Exposu Pregnan	-	Maternal Folic Acid Intake ^a	ASD No. (%)	Typically Developing No. (%)	Expected Joint OR: Multiplicative Model	Expected Joint OR: Additive Model	OR ^b (95% CI)
Indoor Sprays	None	$800 + \mu g$	95 (31.4)	110 (47.4)			1.0
or Foggers		< 800 µg	111 (36.6)	77 (33.2)			2.0 (1.0, 3.8)
	Any	$800 + \mu g$	48 (15.8)	25 (10.8)			2.4 (1.3, 4.2)
		< 800 µg	49 (16.2)	20 (8.6)	4.8	3.4	3.7 (1.7, 8.2)
Pet Flea and	None	$800 + \mu g$	116 (35.8)	113 (47.1)			1.0
Tick Products		< 800 µg	136 (42)	87 (36.3)			1.5 (0.8, 2.8)
	Some ^c	$800 + \mu g$	7 (2.2)	12 (5.0)			0.8 (0.3, 2.2)
		$< 800 \ \mu g$	8 (2.5)	7 (2.9)	1.2	1.3	1.3 (0.4, 4.3)
	Regular ^d	$800 + \mu g$	32 (9.9)	16 (6.7)			1.8 (0.9, 3.6)
		< 800 µg	25 (7.7)	5 (2.1)	2.7	2.3	4.5 (1.5, 14.2)
	Any ^e	$800 + \mu g$	39 (12.0)	28 (11.7)			1.4 (0.8, 2.6)
		< 800 µg	33 (10.2)	12 (5.0)	2.1	1.9	2.7 (1.1, 6.6)
Any Indoor ^f	None	$800 + \mu g$	71 (23.2)	85 (37.1)			1.0
Pesticides		< 800 µg	92 (30.1)	70 (30.6)			1.8 (0.9, 3.6)
	Any	$800 + \mu g$	74 (24.2)	47 (20.5)			1.9 (1.2, 3.2)
	-	< 800 µg	69 (22.6)	27 (11.8)	3.4	2.7	3.7 (1.7, 8.0)
Outdoor Sprays	None	$800 + \mu g$	89 (30.9)	91 (41.2)			1.0
or Foggers		< 800 µg	92 (31.9)	65 (29.4)			1.2 (0.6, 2.3)
	Some ^c	$800 + \mu g$	30 (10.4)	27 (12.2)			1.5 (0.8, 2.9)
		< 800 µg	17 (5.9)	18 (8.1)	1.8	1.7	1.0 (0.4, 2.6)
	Regular ^d	$800 + \mu g$	21 (7.3)	12 (5.4)			1.9 (0.8, 4.2)
	e	< 800 µg	39 (13.5)	8 (3.6)	2.3	2.1	4.5 (1.7, 11.8)
	Any ^e	$800 + \mu g$	51 (17.7)	39 (17.7)			1.6 (0.9, 2.8)
	5	< 800 µg	56 (19.4)	26 (11.8)	1.9	1.8	2.2 (1.1, 4.7)

TABLE S1. Combinations of Household Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) in Fully-Adjusted Models

Any Household Indoor or	None	800 + μg < 800 μg	57 (19.9) 70 (24.4)	63 (28.8) 54 (24.7)			1.0 1.5 (0.7, 3.4)
Outdoor	Any	$800 + \mu g$	79 (27.5)	63 (28.8)			1.7 (1.0, 2.9)
Pesticides		$< 800 \ \mu g$	81 (28.2)	39 (17.8)	2.6	2.2	2.9 (1.4, 6.2)
Any Household	None	$800 + \mu g$	43 (16.1)	50 (25.0)			1.0
or Agricultural		$< 800 \ \mu g$	56 (21)	42 (21.0)			1.8 (0.7, 4.2)
Pesticides	Any	$800 + \mu g$	87 (32.6)	66 (33.0)			1.8 (1.0, 3.1)
		< 800 µg	81 (30.3)	42 (21.0)	3.2	2.6	3.5 (1.5, 7.9)

^a Average daily intake during first month of pregnancy.

^b ORs adjusted for home ownership, child's birth year, study region, race/ethnicity, insurance type, and maternal age, birthplace, education, smoking, intake of vitamins A (natural log), C (natural log), D (natural log), B6, and B12 and calcium in pregnancy month 1, and consumption of an iron supplement in month 6.

^c Exposure to pesticides reported for <6 months of pregnancy.

^d Exposure to pesticides reported for 6+ months of pregnancy.

^e Percentages are relative to categorization into four level variable.

^f Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, not collars), inside the home during pregnancy.

Relation	n to Risk fo	or Autism Spectrun	n Disorders (A	SD) in Fully-A	djusted Models		
Periconceptio Agricultural/Com Pesticide Expos	mercial	Maternal Folic Acid Intake ^b	ASD No. (%)	Typically Developing No. (%)	Expected Joint OR: Multiplicative Model	Expected Joint OR: Additive Model	Observed OR ^c (95% CI)
Chlorpyrifos	None	$\frac{11010 \text{ marke}}{800 + \mu \text{g}}$	148 (45.3)	126 (54.1)	model	model	1.0
		< 800 µg	154 (47.1)	92 (39.5)			1.7 (0.9, 3.1)
	Any	$800 + \mu g$	12 (3.7)	10 (4.3)			1.3 (0.5, 3.2)
	•	< 800 µg	13 (4)	5 (2.2)	2.2	2.0	4.6 (1.3, 15.9)
Organophosphates	None	$800 + \mu g$	134 (41)	114 (48.9)			1.0
0 1 1		< 800 µg	139 (42.5)	87 (37.3)			1.5 (0.8, 2.9)
	Any	$800 + \mu g$	26 (8.0)	22 (9.4)			0.9 (0.5, 1.8)
		< 800 µg	28 (8.6)	10 (4.3)	1.4	1.4	3.8 (1.5, 10.0)
Pyrethroids	None	$800 + \mu g$	139 (42.5)	119 (51.1)			1.0
·		< 800 µg	142 (43.4)	87 (37.3)			1.6 (0.9, 3)
	Any	$800 + \mu g$	21 (6.4)	17 (7.3)			1.1 (0.5, 2.3)
		< 800 µg	25 (7.7)	10 (4.3)	1.8	1.7	3.3 (1.3, 8.4)
Carbamates	None	$800 + \mu g$	149 (45.6)	132 (56.7)			1.0
		< 800 µg	158 (48.3)	92 (39.5)			1.8 (1.0, 3.3)
	Any	$800 + \mu g$	11 (3.4)	4 (1.7)			2.1 (0.6, 7)
	•	< 800 µg	9 (2.8)	5 (2.2)	3.8	2.9	2.3 (0.7, 8.2)
Any Agricultural	None	$800 + \mu g$	127 (38.8)	112 (48.1)			1.0
Pesticides		< 800 µg	134 (41)	83 (35.6)			1.6 (0.8, 3.0)
	Any	$800 + \mu g$	33 (10.1)	24 (10.3)			1.1 (0.6, 2.1)
	-	< 800 µg	33 (10.1)	14 (6.0)	1.8	1.7	3.2 (1.3, 7.6)

TABLE S2. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in

Abbreviations: CI, confidence interval; OR, odds ratio. ^a During the period 3 months before or after conception. ^b Average daily intake during first month of pregnancy.

^c ORs adjusted for home ownership, child's birth year, study region, race/ethnicity, insurance type, and maternal age, birthplace, education, smoking, intake of vitamins A (natural log), C (natural log), D (natural log), B6, and B12, and calcium in pregnancy month 1, and consumption of an iron supplement in month 6.

				Typically	Expected Joint OR:	Expected Joint OR:	
Pesticide Exposure During		Maternal Folic	ASD	Developing	Multiplicative	Additive	
Pregnar	ncy	Acid Intake ^a	No. (%)	No. (%)	Model ^b	Model ^c	OR ^d (95% CI)
Pet Flea and	None	$800 + \mu g$	126 (36.1)	116 (45.3)			1.0
Tick Products		< 800 µg	146 (41.8)	90 (35.2)			1.4 (0.8, 2.4)
	Some ^e	$800 + \mu g$	8 (2.3)	10 (3.9)			0.9 (0.3, 2.4)
		$< 800 \mu g$	9 (2.6)	10 (3.9)	1.3	1.3	0.9 (0.3, 2.5)
	Regular ^f	$800 + \mu g$	34 (9.7)	22 (8.6)			1.4 (0.8, 2.6)
	-	< 800 µg	26 (7.5)	8 (3.1)	1.3	1.8	2.8 (1.1, 6.9)
Any Indoor ^g	None	$800 + \mu g$	80 (24.2)	90 (36.7)			1.0
Pesticides		< 800 µg	98 (29.6)	72 (29.4)			1.2 (0.7, 2.2)
	Any	$800 + \mu g$	78 (23.6)	51 (20.8)			1.7 (1.1, 2.8)
	-	$< 800 \mu g$	75 (22.7)	32 (13.1)	2.0	1.9	2.3 (1.2, 4.4)

TABLE S3. Combinations of Household Pesticide Exposure Including Flea and Tick Pet Collars and Maternal Folic Acid Intake the First

Abbreviations: CI, confidence interval; OR, odds ratio.

^a Average daily intake during first month of pregnancy.

^b Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and folic acid $< 800 \,\mu g$, pesticide exposure and folic acid $800 + \mu g$.

^c Expected combined OR for additive model calculated as 1 + (the OR for no pesticide exposure and folic acid < 800 $\mu g - 1$) + (the OR for pesticide exposure and folic acid 800+ $\mu g - 1$).

^d ORs adjusted for home ownership, child's birth year, and maternal vitamin B6 and vitamin D (natural log) intake during the first month of pregnancy.

^e Exposure to pesticides reported for <6 months of pregnancy.

^f Exposure to pesticides reported for 6+ months of pregnancy.

^g Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, and collars), inside the home during pregnancy.

				Typically	Expected Joint OR:	Expected Joint OR:	
Pesticide Expos	-	Maternal Folic	ASD	Developing	Multiplicative	Additive	h
Pregnan	2	Acid Intake ^a	No. (%)	No. (%)	Model	Model	OR ^b (95% CI)
Indoor Sprays	None	$600 + \mu g$	117 (35.5)	124 (50)			1.0
or Foggers		< 600 µg	110 (33.3)	76 (30.7)			1.4 (0.8, 2.5)
	Any	$600 + \mu g$	55 (16.7)	29 (11.7)			2.0 (1.2, 3.4)
		< 600 µg	48 (14.6)	19 (7.7)	2.8	2.4	2.6 (1.3, 5.3)
Pet Flea and	None	$600 + \mu g$	141 (40.3)	128 (50)			1.0
Tick Products		$< 600 \mu g$	135 (38.6)	85 (33.2)			1.4 (0.8, 2.5)
	Some ^c	$600 + \mu g$	9 (2.6)	13 (5.1)			0.8 (0.3, 2)
		$< 600 \mu g$	7 (2.0)	7 (2.7)	1.1	1.2	1 (0.3, 3.2)
	Regular ^d	$600 + \mu g$	36 (10.3)	18 (7.0)			1.8 (0.9, 3.3)
	U	< 600 µg	22 (6.3)	5 (2.0)	2.5	2.2	3.5 (1.2, 10.5)
Any Indoor ^e	None	$600 + \mu g$	89 (26.8)	97 (39.8)			1.0
Pesticides		$< 600 \mu g$	92 (27.7)	68 (27.9)			1.2 (0.7, 2.3)
	Any	$600 + \mu g$	85 (25.6)	53 (21.7)			1.8 (1.1, 2.8)
	5	< 600 µg	66 (19.9)	26 (10.7)	2.2	2.0	2.5 (1.3, 4.9)
Dutdoor Sprays	None	$600 + \mu g$	106 (34.1)	100 (42)			1.0
or Foggers		$< 600 \mu g$	90 (28.9)	68 (28.6)			1.1 (0.6, 2)
20	Some ^c	$600 + \mu g$	35 (11.3)	34 (14.3)			1.3 (0.7, 2.4)
	-	< 600 µg	17 (5.5)	16 (6.7)	1.4	1.4	1.0 (0.4, 2.4)
	Regular ^d	$600 + \mu g$	28 (9.0)	13 (5.5)			2.0 (0.9, 4.1)
	0	< 600 µg	35 (11.3)	7 (2.9)	2.2	2.1	4.0 (1.5, 10.4)
Any Household	None	$600 + \mu g$	68 (21.9)	71 (30.3)			1.0
Indoor or		< 600 µg	71 (22.9)	54 (23.1)			1.2 (0.6, 2.3)
Outdoor	Any	$600 + \mu g$	97 (31.3)	71 (30.3)			1.7 (1.0, 2.7)

Pesticides		$< 600 \ \mu g$	74 (23.9)	38 (16.2)	2.0	1.9	2.0 (1.0, 3.8)
Any Household	None	$600 + \mu g$	52 (18.3)	57 (26.6)			1.0
or Agricultural		< 600 µg	55 (19.3)	41 (19.2)			1.3 (0.6, 2.7)
Pesticides	Any	$600 + \mu g$	103 (36.1)	74 (34.6)			1.8 (1.1, 3)
		< 600 µg	75 (26.3)	42 (19.6)	2.3	2.1	2.1 (1.1, 4.2)

^a Average daily intake during first month of pregnancy.

^b ORs adjusted for home ownership, child's birth year, and maternal vitamin B6 and vitamin D (natural log) intake during the first month of pregnancy.

 ^c Exposure to pesticides reported for <6 months of pregnancy.
 ^d Exposure to pesticides reported for 6+ months of pregnancy.
 ^e Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, not collars), inside the home during pregnancy.

	1			т : II	Expected	Expected	
Periconceptio				Typically	Joint OR:	Joint OR:	01 1
Agricultural/Com		Maternal Folic	ASD	Developing	Multiplicative	Additive	Observed
Pesticide Expos		Acid Intake ^b	No. (%)	No. (%)	Model	Model	OR ^c (95% CI)
Chlorpyrifos	None	$600 + \mu g$	174 (49.9)	141 (56.4)			1.0
		< 600 µg	150 (43)	92 (36.8)			1.4 (0.8, 2.3)
	Any	$600 + \mu g$	13 (3.7)	12 (4.8)			1.0 (0.4, 2.4)
		< 600 µg	12 (3.4)	5 (2.0)	1.4	1.4	2.6 (0.8, 8.3)
Organophosphates	None	$600 + \mu g$	158 (45.3)	129 (51.6)			1.0
		$< 600 \mu g$	137 (39.3)	87 (34.8)			1.3 (0.7, 2.2)
	Any	$600 + \mu g$	29 (8.3)	24 (9.6)			0.9 (0.5, 1.7)
	·	< 600 µg	25 (7.2)	10 (4.0)	1.2	1.2	2.3 (1.0, 5.7)
Pyrethroids	None	$600 + \mu g$	162 (46.4)	134 (53.6)			1.0
•		$< 600 \mu g$	140 (40.1)	86 (34.4)			1.3 (0.8, 2.3)
	Any	$600 + \mu g$	25 (7.2)	19 (7.6)			1.1 (0.6, 2.1)
	5	< 600 µg	22 (6.3)	11 (4.4)	1.4	1.4	1.9 (0.8, 4.6)
Carbamates	None	$600 + \mu g$	175 (50.1)	148 (59.2)			1.0
		< 600 µg	154 (44.1)	92 (36.8)			1.5 (0.8, 2.5)
	Any	$600 + \mu g$	12 (3.4)	5 (2.0)			1.6 (0.5, 4.8)
	5	< 600 µg	8 (2.3)	5 (2.0)	2.4	2.1	1.4 (0.4, 4.5)
Any Agricultural	None	$600 + \mu g$	149 (42.7)	126 (50.4)			1.0
Pesticides		< 600 µg	133 (38.1)	82 (32.8)			1.3 (0.8, 2.3)
	Any	$600 + \mu g$	38 (10.9)	27 (10.8)			1.1 (0.6, 1.9)
	j	< 600 µg	29 (8.3)	15 (6.0)	1.4	1.4	1.9 (0.9, 4.2)

TABLE S5. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in

Abbreviations: CI, confidence interval; OR, odds ratio. ^a During the period 3 months before or after conception. ^b Average daily intake during first month of pregnancy.

^c ORs adjusted for home ownership, child's birth year, and maternal vitamin B6 and vitamin D intake during the first month of pregnancy.

Month of		ncy in Relation to	-	0 0	•		a marke the ringt	
				•	Expected	Expected Joint		
Agricultural/Comr				Typically	Joint OR:	OR:		
Pesticide Exposure		Maternal Folic	ASD	Developing	Multiplicative	Additive	Observed	
Pregnancy ^a		Acid Intake ^b	No. (%)	No. (%)	Model	Model	OR ^c (95% CI)	RERI (CI)
Chlorpyrifos	None	$800 + \mu g$	158 (45.1)	130 (51.4)			1.0	
		< 800 µg	164 (46.9)	104 (41.1)			1.2 (0.8, 2.1)	
	Any	$800 + \mu g$	14 (4.0)	14 (5.5)			0.9 (0.4, 2)	
		$< 800 \ \mu g$	14 (4.0)	5 (2.0)	1.1	1.1	2.3 (0.7, 7.3)	1.2 (-1.4, 3.8)
Organophosphates	None	$800 + \mu g$	141 (40.3)	116 (45.9)			1.0	
		< 800 µg	140 (40.0)	92 (36.4)			1.2 (0.7, 1.9)	
	Any	$800 + \mu g$	31 (8.9)	28 (11.1)			0.9 (0.5, 1.7)	
	•	< 800 µg	38 (10.9)	17 (6.7)	1.1	1.1	2.0 (1, 4.3)	1.0 (-0.4, 2.4)
Pyrethroids	None	$800 + \mu g$	148 (42.3)	118 (46.6)			1.0	
5		$< 800 \mu g$	152 (43.4)	93 (36.8)			1.2 (0.7, 2)	
	Any	$800 + \mu g$	24 (6.9)	26 (10.3)			0.7 (0.4, 1.3)	
	•	< 800 µg	26 (7.4)	16 (6.3)	0.8	0.9	1.4 (0.7, 3.1)	0.5 (-0.5, 1.6)
Carbamates	None	$800 + \mu g$	157 (44.9)	137 (54.2)			1.0	
	1,0110	< 800 µg	166 (47.4)	103 (40.7)			1.3 (0.8, 2.2)	
	Any	$800 + \mu g$	15 (4.3)	7 (2.8)			1.6 (0.6, 4.2)	
)	< 800 µg	12 (3.4)	6 (2.4)	2.1	1.9	1.7 (0.6, 5.1)	-0.2 (-2.6, 2.1)
Any Agricultural	None	$800 + \mu g$	131 (37.4)	107 (42.3)			1.0	
Pesticides		< 800 µg	137 (39.1)	87 (34.4)			1.2 (0.7, 2)	
	Any	$800 + \mu g$	41 (11.7)	37 (14.6)			0.9(0.5, 1.5)	
	j	< 800 µg	41 (11.7)	22 (8.7)	1.1	1.1	1.7 (0.8, 3.4)	0.6 (-0.4, 1.7)

TABLE S6. Combinations of Agricultural Pesticide Exposure During Pregnancy and Maternal Folic Acid Intake the First

Abbreviations: CI, confidence interval; OR, odds ratio. ^a Any exposure during pregnancy using 1250 m buffer. ^b Average daily intake during first month of pregnancy.

TABLE S7. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1500 m Buffer Expected Expected Periconceptional Typically Joint OR: Joint OR: Agricultural/Commercial Maternal Folic ASD Developing Multiplicative Observed Additive Acid Intake^b Pesticide Exposure^a No. (%) No. (%) Model Model OR^c (95% CI) Chlorpyrifos 126 (50.4) $800 + \mu g$ 155 (44.4) 1.0 None $< 800 \, \mu g$ 160 (45.9) 97 (38.8) 1.3 (0.8, 2.1) Any $800 + \mu g$ 16 (4.6) 17 (6.8) 0.9(0.4, 1.8) $< 800 \, \mu g$ 18 (5.2) 10 (4.0) 1.2 1.2 1.7 (0.7, 4.1) Organophosphates 135 (38.7) None $800 + \mu g$ 112 (44.8) 1.0 $< 800 \, \mu g$ 140 (40.1) 88 (35.2) 1.2(0.7, 2.1)36 (10.3) 0.9(0.5, 1.5)Any $800 + \mu g$ 31 (12.4) $< 800 \, \mu g$ 38 (10.9) 19 (7.6) 1.1 1.1 1.6 (0.8, 3.3) Pyrethroids 142 (40.7) 119 (47.6) 1.0 None $800 + \mu g$ $< 800 \, \mu g$ 145 (41.6) 90 (36) 1.3(0.7, 2.1)1.0(0.5, 1.8)Any $800 + \mu g$ 29 (8.3) 24 (9.6) 33 (9.5) 1.3 1.3 1.8 (0.8, 3.7) $< 800 \, \mu g$ 17 (6.8) Carbamates None $800 + \mu g$ 158 (45.3) 136 (54.4) 1.0 1.3 (0.8, 2.2) $< 800 \, \mu g$ 166 (47.6) 101 (40.4) $800 + \mu g$ 13 (3.7) 7 (2.8) 1.4 (0.5, 3.6) Any $< 800 \, \mu g$ 12 (3.4) 6 (2.4) 1.8 1.7 1.6(0.5, 4.7)Any Agricultural 126 (36.1) 109 (43.6) $800 + \mu g$ 1.0 None Pesticides $< 800 \, \mu g$ 133 (38.1) 83 (33.2) 1.2(0.7, 2.1)1.0 (0.6, 1.7) $800 + \mu g$ 45 (12.9) 34 (13.6) Any $< 800 \, \mu g$ 45 (12.9) 24 (9.6) 1.2 1.2 1.6 (0.8, 3.1)

^c ORs adjusted for home ownership, child's birth year, and maternal vitamin B6 and vitamin D (natural log) intake during the first month of pregnancy.

Abbreviations: CI, confidence interval; OR, odds ratio.

^a During the period 3 months before or after conception.

^b Average daily intake during first month of pregnancy.

TABLE S8. Combine Relation						e First Month	n of Pregnancy in
Relation	I to Kisk IC	or Autism Spectrun	n Disorders (A	(SD) using a 17	Expected	Expected	
Periconceptio	nal			Typically	Joint OR:	Joint OR:	
Agricultural/Com		Maternal Folic	ASD	Developing	Multiplicative	Additive	Observed
Pesticide Expos		Acid Intake ^b	No. (%)	No. (%)	Model	Model	OR^{c} (95% CI)
Chlorpyrifos	None	$\frac{800 + \mu g}{800 + \mu g}$	152 (43.6)	122 (48.8)	Model	Middel	1.0
Chiorpymos	None	< 800 μg	152 (43.0) 156 (44.7)	95 (38.0)			1.3 (0.7, 2.1)
	Any	$< 800 \mu g$ $800 + \mu g$	19 (5.4)	21 (8.4)			0.8 (0.4, 1.6)
	Any	< 800 μg	22 (6.3)	12 (4.8)	1.0	1.1	1.7 (0.7, 4.0)
		< 800 µg	22 (0.3)	12 (4.0)	1.0	1.1	1.7 (0.7, 4.0)
Organophosphates	None	$800 + \mu g$	134 (38.4)	108 (43.2)			1.0
organophiosphares	1.0110	< 800 µg	135 (38.7)	81 (32.4)			1.3 (0.7, 2.1)
	Any	$800 + \mu g$	37 (10.6)	35 (14.0)			0.8 (0.4, 1.3)
	5	< 800 µg	43 (12.3)	26 (10.4)	1.0	1.1	1.3 (0.7, 2.5)
Pyrethroids	None	$800 + \mu g$	139 (39.8)	116 (46.4)			1.0
·		$< 800 \mu g$	140 (40.1)	85 (34.0)			1.3 (0.8, 2.2)
	Any	$800 + \mu g$	32 (9.2)	27 (10.8)			1.0 (0.5, 1.7)
	2	< 800 µg	38 (10.9)	22 (8.8)	1.3	1.3	1.5 (0.7, 2.9)
Corbornatas	None	<u> 200 - u a</u>	155 (11 1)	125 (54)			1.0
Carbamates	None	$800 + \mu g$	155 (44.4)	135 (54)			
	A	< 800 µg	164 (47.0)	97 (38.8)			1.4 (0.9, 2.4)
	Any	$800 + \mu g$	16 (4.6)	8 (3.2)	0.1	1.0	1.5 (0.6, 3.8)
		$< 800 \ \mu g$	14 (4.0)	10 (4.0)	2.1	1.9	1.1 (0.4, 2.7)
Any Agricultural	None	$800 + \mu g$	124 (35.5)	103 (41.2)			1.0
Pesticides		< 800 µg	128 (36.7)	75 (30.0)			1.3 (0.8, 2.3)
	Any	$800 + \mu g$	47 (13.5)	40 (16.0)			0.9 (0.5, 1.4)
	5	< 800 µg	50 (14.3)	32 (12.8)	1.2	1.2	1.2 (0.7, 2.3)

^c ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log), vitamin B6, and folic acid intake during the first month of pregnancy.

Abbreviations: CI, confidence interval; OR, odds ratio. ^a During the period 3 months before or after conception. ^b Average daily intake during first month of pregnancy.

^c ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log), vitamin B6, and folic acid intake during the first month of pregnancy.

Terms		
Exposure	Without Interaction Term ^b	With Interaction Term ^{b,c}
Household Pesticides		
Indoor Sprays/Foggers	750.1	752.1
Pet Flea/Tick Products	816.1	817.9
Any Indoor Pesticides	746.5	748.2
Outdoor Sprays/Foggers	746.7	748.7
Agricultural Pesticides ^d		
Chlorpyrifos	786.0	787.6
Organophosphates	786.1	785.5
Pyrethroids	786.0	786.6
Carbamates	786.2	788.1

TABLE S9. AIC^a for Assessing Goodness of Fit for Models with and without Multiplicative Interaction Terms

^a Akaike Information Criterion; lower AIC indicates better-fitting model.

^b Models included pesticide exposure, maternal folic acid intake in first month of pregnancy (<800 µg), home ownership, child's birth year, and maternal vitamin B6 and vitamin D (natural log) intake during the first month of pregnancy.

^c Models included product term maternal folic acid intake in first month of pregnancy (<800 μ g)*Pesticide exposure.

^dAgricultural exposure during the period 3 months before or after conception.

R1SK	tor Autism S	Spectrum Disorde	ers (ASD)				
Pesticide Exposu Pregnan	0	Maternal Vitamin B12 Intake ^a	ASD No. (%)	Typically Developing No. (%)	Expected Joint OR: Multiplicative Model ^b	Expected Joint OR: Additive Model ^c	OR ^d (95% CI)
Indoor Sprays	None	$8 + \mu g$	114 (34.7)	112 (45.2)			1.0
or Foggers		$< 8 \mu g$	112 (34)	88 (35.5)			0.9 (0.5, 1.6)
	Any	$8 + \mu g$	46 (14)	28 (11.3)			1.6 (0.9, 2.9)
	·	< 8 µg	57 (17.3)	20 (8.1)	1.4	1.5	2.1 (1.1, 4.3)
Pet Flea and	None	$8 + \mu g$	127 (36.4)	116 (45.3)			1.0
Tick Products		< 8 µg	148 (42.4)	97 (37.9)			1.2 (0.7, 2)
	Some ^e	$8 + \mu g$	8 (2.3)	13 (5.1)			0.7 (0.3, 1.9)
		< 8 µg	8 (2.3)	7 (2.7)	0.8	0.9	0.9 (0.3, 2.9)
	Regular ^f	$8 + \mu g$	35 (10.0)	17 (6.6)			1.7 (0.9, 3.2)
		$< 8 \ \mu g$	23 (6.6)	6 (2.3)	1.5	1.9	3.0 (1.1, 8.4)
Any Indoor ^g	None	$8 + \mu g$	85 (25.7)	87 (35.7)			1.0
Pesticides		< 8 µg	95 (28.7)	78 (32)			0.9 (0.5, 1.7)
	Any	$8 + \mu g$	76 (23)	51 (20.9)			1.5 (0.9, 2.5)
		$< 8 \ \mu g$	75 (22.7)	28 (11.5)	1.4	1.4	2.1 (1.1, 4.2)
Outdoor Sprays	None	$8 + \mu g$	94 (30.3)	93 (39.1)			1.0
or Foggers		$< 8 \mu g$	101 (32.6)	75 (31.5)			1 (0.5, 1.9)
	Some ^e	$8 + \mu g$	30 (9.7)	33 (13.9)			1.2 (0.7, 2.3)
		< 8 µg	22 (7.1)	17 (7.1)	1.2	1.2	1.1 (0.5, 2.6)
	Regular ^f	$8 + \mu g$	31 (10.0)	10 (4.2)			2.9 (1.3, 6.5)
		$< 8 \ \mu g$	32 (10.3)	10 (4.2)	3.2	2.9	2.5 (1.0, 6)
Any Household	None	$8 + \mu g$	62 (20.1)	65 (27.8)			1.0
Indoor or		< 8 µg	76 (24.6)	60 (25.6)			1.1 (0.5, 2.2)
Outdoor	Any	$8 + \mu g$	89 (28.8)	68 (29.1)			1.6 (1.0, 2.6)
Pesticides		< 8 µg	82 (26.5)	41 (17.5)	1.8	1.7	2.0 (1.0, 3.9)

TABLE S10. Combinations of Household Pesticide Exposure and Maternal Vitamin B12 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD)

Any Household	None	$8 + \mu g$	48 (16.9)	51 (23.8)			1.0	
or Agricultural		$< 8 \mu g$	58 (20.4)	47 (22.0)			1.1 (0.5, 2.4)	
Pesticides	Any	$8 + \mu g$	94 (33.1)	72 (33.6)			1.6 (1.0, 2.7)	
		< 8 µg	84 (29.6)	44 (20.6)	1.8	1.7	2.1 (1.0, 4.4)	

^a Average daily intake during first month of pregnancy. TD median for $B12 = 8.00 \ \mu g$.

^b Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and vitamin $B12 < 8 \mu g$, pesticide exposure and $B12 8 + \mu g$.

^c Expected combined OR for additive model calculated as $1 + (\text{the OR for no pesticide exposure and } B12 < 8 \,\mu\text{g} - 1)$

+ (the OR for pesticide exposure and B12 8+ μ g - 1).

^d ORs adjusted for home ownership, child's birth year, and maternal vitamin B6, vitamin D (natural log), and folic acid intake during the first month of pregnancy.

^e Exposure to pesticides reported for <6 months of pregnancy.

^f Exposure to pesticides reported for 6+ months of pregnancy.

^g Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, not collars), inside the home during pregnancy.

Kelatio		or Autism Spectru		(SD) using a 12			
					Expected	Expected	
Periconceptio		Maternal Vitamin B12		Typically	Joint OR:	Joint OR:	
	Agricultural/Commercial		ASD	Developing	Multiplicative	Additive	Observed
Pesticide Exposure ^a		Intake ^b	No. (%)	No. (%)	Model ^c	Model ^d	OR ^e (95% CI)
Chlorpyrifos	None	$8 + \mu g$	163 (46.8)	130 (52)			1.0
		< 8 µg	160 (46)	103 (41.2)			1.0 (0.6, 1.8)
	Any	$8 + \mu g$	10 (2.9)	11 (4.4)			0.9 (0.3, 2.2)
		$< 8 \ \mu g$	15 (4.3)	6 (2.4)	0.9	0.9	2.1 (0.7, 6.2)
Organophosphates	None	$8 + \mu g$	146 (42)	120 (48)			1.0
		< 8 µg	148 (42.5)	96 (38.4)			1.0 (0.6, 1.8)
	Any	$8 + \mu g$	27 (7.8)	21 (8.4)			1.0 (0.5, 1.9)
	·	< 8 µg	27 (7.8)	13 (5.2)	1.0	1.0	1.6 (0.7, 3.7)
Pyrethroids	None	$8 + \mu g$	147 (42.2)	123 (49.2)			1.0
5		< 8 µg	154 (44.3)	97 (38.8)			1.1 (0.6, 1.9)
	Any	$8 + \mu g$	26 (7.5)	18 (7.2)			1.2 (0.6, 2.4)
	5	< 8 µg	21 (6)	12 (4.8)	1.3	1.3	1.4 (0.6, 3.4)
Carbamates	None	$8 + \mu g$	161 (46.3)	136 (54.4)			1.0
		< 8 µg	167 (48)	104 (41.6)			1.2 (0.7, 2)
	Any	$8 + \mu g$	12 (3.5)	5 (2)			1.6 (0.6, 4.9)
	j	< 8 µg	8 (2.3)	5 (2)	1.9	1.8	1.1 (0.3, 3.7)
							. ,
Any Agricultural	None	$8 + \mu g$	136 (39.1)	117 (46.8)			1.0
Pesticides		$< 8 \mu g$	145 (41.7)	91 (36.4)			1.1 (0.6, 1.9)
	Any	$8 + \mu g$	37 (10.6)	24 (9.6)			1.2 (0.7, 2.2)
	-	< 8 µg	30 (8.6)	18 (7.2)	1.3	1.3	1.4 (0.7, 3.0)

TABLE S11 Combined and Assimilated Destinite Foregoing and Material Without D10 Intels the First Marth of December 201

Abbreviations: CI, confidence interval; OR, odds ratio.

^a During the period 3 months before or after conception.
^b Average daily intake during first month of pregnancy. TD median for B12 = 8.00.

- ^c Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and $B12 < 8 \mu g$, pesticide exposure and $B12 8 + \mu g$.
- ^d Expected combined OR for additive model calculated as $1 + (\text{the OR for no pesticide exposure and } B12 < 8 \mu g 1) + (\text{the OR for pesticide exposure and } B12 8 + \mu g 1).$
- ^e ORs adjusted for home ownership, child's birth year, and maternal vitamin B6, vitamin D (natural log), and folic acid intake during the first month of pregnancy.

Pesticide Expos Pregnan	0	Maternal Vitamin B6 Intake ^a	ASD No. (%)	Typically Developing No. (%)	Expected Joint OR: Multiplicative Model ^b	Expected Joint OR: Additive Model ^c	OR ^d (95% CI)
ndoor Sprays None		2.83 + mg	90 (27.3)	98 (39.5)			1.0
or Foggers		< 2.83 mg	137 (41.5)	102 (41.1)			1.2 (0.7, 2)
	Any	2.83 + mg	44 (13.3)	25 (10.1)			2.0 (1.1, 3.5)
	·	< 2.83 mg	59 (17.9)	23 (9.3)	2.4	2.2	2.3 (1.2, 4.5)
Pet Flea and	None	2.83 + mg	107 (30.6)	102 (39.8)			1.0
Tick Products		< 2.83 mg	169 (48.3)	111 (43.4)			1.2 (0.7, 1.9)
Some ^e	2.83 + mg	5 (1.4)	12 (4.7)			0.6 (0.2, 1.7)	
		< 2.83 mg	11 (3.1)	8 (3.1)	0.7	0.8	1.2 (0.4, 3.3)
	Regular ^f	2.83 + mg	32 (9.1)	12 (4.7)			2.4 (1.1, 5)
	C	< 2.83 mg	26 (7.4)	11 (4.3)	2.9	2.6	1.8 (0.8, 4.1)
Any Indoor ^g	None	2.83 + mg	66 (19.9)	77 (31.6)			1.0
Pesticides		< 2.83 mg	115 (34.6)	88 (36.1)			1.1 (0.6, 2)
	Any	2.83 + mg	71 (21.4)	42 (17.2)			2.0 (1.2, 3.4)
	5	< 2.83 mg	80 (24.1)	37 (15.2)	2.2	2.1	2.0 (1.1, 3.7)
Dutdoor Sprays	None	2.83 + mg	75 (24.1)	80 (33.6)			1.0
or Foggers		< 2.83 mg	121 (38.9)	88 (37)			1.3 (0.8, 2.3)
22	Some ^e	2.83 + mg	26 (8.4)	27 (11.3)			1.3 (0.7, 2.5)
		< 2.83 mg	26 (8.4)	23 (9.7)	1.7	1.6	1.3 (0.6, 2.7)
	Regular ^f	2.83 + mg	28 (9.0)	12 (5.0)			2.4 (1.1, 5.2)
	0	< 2.83 mg	35 (11.3)	8 (3.4)	3.1	2.7	4.2 (1.7, 10.7)
Any Household	None	2.83 + mg	46 (14.8)	60 (25.6)			1.0
Indoor or		< 2.83 mg	93 (30.0)	65 (27.8)			1.6 (0.9, 3)
Outdoor	Any	2.83 + mg	83 (26.8)	57 (24.4)			2.1 (1.3, 3.7)

Pesticides		< 2.83 mg	88 (28.4)	52 (22.2)	3.4	2.7	2.2 (1.2, 4.1)	
Any Household or Agricultural	None	2.83 + mg < 2.83 mg	35 (12.3) 72 (25.3)	46 (21.5) 52 (24.3)			1.0 1.7 (0.8, 3.3)	
Pesticides	Any	2.83 + mg	86 (30.2)	62 (29.0)			2.2 (1.2, 3.8)	
		< 2.83 mg	92 (32.3)	54 (25.2)	3.7	2.9	2.5 (1.3, 4.8)	

^a Average daily intake during first month of pregnancy. TD median for B6 = 2.83 mg.

^b Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and vitamin B 6 < 2.83 mg, pesticide exposure and B6 2.83+ mg.

^c Expected combined OR for additive model calculated as 1 + (the OR for no pesticide exposure and B6 < 2.83 mg - 1) + (the OR for pesticide exposure and B6 2.83 + mg - 1).

^d ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log), and folic acid intake during the first month of pregnancy.

^e Exposure to pesticides reported for <6 months of pregnancy.

^f Exposure to pesticides reported for 6+ months of pregnancy.

^g Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, not collars), inside the home during pregnancy.

TABLE S13. Combi Relatio		Agricultural Pesti or Autism Spectru	-			the First Mo	nth of Pregnancy in	
Periconceptional Agricultural/Commercial Pesticide Exposure ^a		Maternal Vitamin B6 ASD Intake ^b No. (%)		Typically Developing No. (%)	Expected Joint OR: Multiplicative Model ^c	Expected Joint OR: Additive Model ^d	Observed OR ^e (95% CI)	
Chlorpyrifos			138 (39.5)	113 (45.2)			1.0	
	Any	< 2.83 mg 2.83 + mg < 2.83 mg	186 (53.3) 9 (2.6) 16 (4.6)	120 (48) 10 (4.0) 7 (2.8)	0.9	0.9	1 (0.6, 1.7) 0.9 (0.3, 2.3) 2.1 (0.8, 5.7)	
Organophosphates	None	2.83 + mg < 2.83 mg	125 (35.8) 170 (48.7)	103 (41.2) 113 (45.2)			1.0 1.0 (0.6, 1.7)	
	Any	2.83 + mg < 2.83 mg	22 (6.3) 32 (9.2)	20 (8.0) 14 (5.6)	0.9	0.9	0.9 (0.5, 1.8) 1.8 (0.8, 3.8)	
Pyrethroids	None	2.83 + mg < 2.83 mg	125 (35.8) 177 (50.7)	106 (42.4) 114 (45.6)			1.0 1.1 (0.7, 1.8)	
	Any	2.83 + mg < 2.83 mg	22 (6.3) 25 (7.2)	17 (6.8) 13 (5.2)	1.3	1.3	1.2 (0.6, 2.3) 1.5 (0.7, 3.4)	
Carbamates	None	2.83 + mg < 2.83 mg	134 (38.4) 195 (55.9)	120 (48) 120 (48)			1.0 1.2 (0.8, 2)	
	Any	2.83 + mg < 2.83 mg	13 (3.7) 7 (2.0)	3 (1.2) 7 (2.8)	3.8	3.4	3.2 (0.9, 11.8) 0.7 (0.2, 2.3)	
Any Agricultural Pesticides	None	2.83 + mg	116 (33.2) 166 (47.6)	99 (39.6) 109 (43.6)			1.0	
resuciues	Any	< 2.83 mg 2.83 + mg < 2.83 mg	31 (8.9) 36 (10.3)	109 (43.6) 24 (9.6) 18 (7.2)	1.2	1.2	1.1 (0.6, 1.7) 1.1 (0.6, 2) 1.6 (0.8, 3.3)	

Abbreviations: CI, confidence interval; OR, odds ratio. ^a During the period 3 months before or after conception. ^b Average daily intake during first month of pregnancy. TD median for B6 = 2.83 mg.

- ^c Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and B6 < 2.83 mg, pesticide exposure and B6 2.83 + mg.
- ^d Expected combined OR for additive model calculated as 1 + (the OR for no pesticide exposure and B6 < 2.83 mg 1) + (the OR for pesticide exposure and B6 2.83 + mg 1).
- ^e ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log) and folic acid intake during the first month of pregnancy.

		Maternal Folic Acid and		Typically	Expected Joint OR:	Expected Joint OR:		
Pesticide Exposu	are During	Vitamin B6	ASD	Developing	Multiplicative	Additive		
Pregnan	•	Intake ^a	No. (%)	No. (%)	Model ^b	Model ^c	OR ^d (95% CI)	RERI (95% C
Indoor Sprays	None	High	121 (36.7)	128 (51.6)			1.0	
or Foggers		Low	106 (32.1)	72 (29.0)			1.8 (1, 3.4)	
	Any	High	54 (16.4)	32 (12.9)			1.8 (1.1, 3)	
		low	49 (14.9)	16 (6.5)	3.2	2.6	4.0 (1.9, 8.6)	1.4 (-1.2, 4.1)
Pet Flea and	None	High	142 (40.6)	134 (52.3)			1.0	
Tick Products		Low	134 (38.3)	79 (30.9)			2 (1.1, 3.6)	
	Some ^e	High	8 (2.3)	14 (5.5)			0.7 (0.3, 1.7)	
		low	8 (2.3)	6 (2.3)	1.4	1.7	1.7 (0.5, 5.4)	-0.1 (-2.2, 2.1)
	Regular ^f	High	38 (10.9)	18 (7.0)			1.9 (1.0, 3.6)	
	-	Low	20 (5.7)	5 (2.0)	3.8	2.9	4.3 (1.4, 13.2)	1.4 (-3.2, 6.0)
	Any	High	46 (13.1)	32 (12.5)			1.4 (0.8, 2.4)	
		low	28 (8.0)	11 (4.3)	2.8	2.4	2.9 (1.2, 6.8)	0.5 (-1.8, 2.7)
Any Indoor ^g	None	High	90 (27.1)	101 (41.4)			1.0	
Pesticides		Low	91 (27.4)	64 (26.2)			1.7 (0.9, 3.3)	
	Any	High	86 (25.9)	56 (23.0)			1.7 (1.1, 2.7)	
	-	low	65 (19.6)	23 (9.4)	2.9	2.4	3.7 (1.8, 7.6)	1.3 (-0.9, 3.4)
Outdoor Sprays	None	High	104 (33.4)	105 (44.1)			1.0	
or Foggers		Low	92 (29.6)	63 (26.5)			1.7 (0.9, 3.3)	
	Some ^e	High	35 (11.3)	35 (14.7)			1.2 (0.7, 2.1)	
		low	17 (5.5)	15 (6.3)	2.0	1.9	1.6 (0.7, 4)	-0.3 (-1.7, 1.2)
	Regular ^f	High	31 (10.0)	14 (5.9)			2.1 (1.0, 4.3)	
	-	Low	32 (10.3)	6 (2.5)	3.6	2.8	6.5 (2.3, 18.2)	3.0 (-2.5, 8.6)
	Any	High	66 (21.2)	49 (20.6)			1.5 (0.9, 2.4)	-

		low	49 (15.8)	21 (8.8)	2.6	2.2	3.1 (1.5, 6.5)	0.9 (-1.0, 2.8)
Any Household	None	High	67 (21.6)	75 (32.1)			1.0	
Indoor or		Low	72 (23.2)	50 (21.4)			2.0 (1, 4.1)	
Outdoor	Any	High	98 (31.6)	75 (32.1)			1.6 (1, 2.5)	
Pesticides	·	low	73 (23.6)	34 (14.5)	3.2	2.6	3.4 (1.7, 6.8)	0.8 (-1.0, 2.6)
Any Household	None	High	51 (17.9)	59 (27.6)			1.0	
or Agricultural		Low	56 (19.7)	39 (18.2)			2.1 (1, 4.6)	
Pesticides ^h	Any	High	105 (36.8)	79 (36.9)			1.7 (1.1, 2.8)	
		low	73 (25.6)	37 (17.3)	3.6	2.8	3.6 (1.7, 7.4)	0.8 (-1.2, 2.7)

Abbreviations: CI, confidence interval; OR, odds ratio; RERI, relative excess risk due to interaction.

^a Average daily intake during first month of pregnancy. 'High' = $800 + \mu g$ folic acid and/or 2.83 mg vitamin B6.

'Low' = $< 800 \ \mu g$ folic acid and $< 2.83 \ mg$ vitamin B6.

^b Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and low folic acid/vitamin B6, pesticide exposure and high folic acid/vitamin B6.

^c Expected combined OR for additive model calculated as 1 + (the OR for no pesticide exposure and low folic acid/vitamin B6 - 1) + (the OR for pesticide exposure and high folic acid/vitamin B6 - 1).

^d ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log) intake during the first month of pregnancy.

^e Exposure to pesticides reported for <6 months of pregnancy.

^f Exposure to pesticides reported for 6+ months of pregnancy.

^g Maternally-reported exposure to professionally- or self-applied pesticide sprays or foggers, or pet pesticides (flea/tick shampoos, pouches, not collars), inside the home during pregnancy.

^h Any household indoor or outdoor pesticide exposure during pregnancy; or agricultural pesticide exposure months 3 months before through 3rd month of pregnancy.

		or Autishi Spectru		(ISD) using u T		D 1		
	1	Maternal Folic		T 11	Expected	Expected		
Periconceptio		Acid and		Typically	Joint OR:	Joint OR:	01 1	
Agricultural/Com		Vitamin B6	ASD	Developing	Multiplicative	Additive	Observed	
Pesticide Expos		Intake ^b	No. (%)	No. (%)	Model ^c	Model ^d	OR ^e (95% CI)	RERI (95% CI)
Chlorpyrifos	None	High	179 (51.3)	148 (59.2)			1.0	
		Low	145 (41.6)	85 (34.0)			1.7 (1, 3.1)	
	Any	High	13 (3.7)	12 (4.8)			1.1 (0.5, 2.6)	
		low	12 (3.4)	5 (2.0)	1.9	1.8	3.2 (1.0, 10.6)	1.4 (-2.3, 5.1)
Organophosphates	None	High	162 (46.4)	136 (54.4)			1.0	
• • •		Low	133 (38.1)	80 (32.0)			1.7 (0.9, 3)	
	Any	High	30 (8.6)	24 (9.6)			1.0 (0.6, 1.9)	
	2	low	24 (6.9)	10 (4.0)	1.7	1.7	2.9 (1.2, 7.2)	1.2 (-1.2, 3.6)
Pyrethroids	None	High	165 (47.3)	140 (56.0)			1.0	
·		Low	137 (39.3)	80 (32.0)			1.7 (1, 3.1)	
	Any	High	27 (7.7)	20 (8.0)			1.2 (0.6, 2.2)	
	2	low	20 (5.7)	10 (4.0)	2.0	1.9	2.4 (1.0, 5.9)	0.5 (-1.6, 2.5)
Carbamates	None	High	179 (51.3)	155 (62.0)			1.0	
		Low	150 (43.0)	85 (34.0)			1.9 (1.1, 3.4)	
	Any	High	13 (3.7)	5 (2.0)			1.9 (0.7, 5.6)	
	5	low	7 (2.0)	5 (2.0)	3.6	2.8	1.5 (0.4, 5.1)	-1.3 (-4.1, 1.5)
Any Agricultural	None	High	153 (43.8)	132 (52.8)			1.0	
Pesticides	1,0110	Low	129 (37.0)	76 (30.4)			1.7 (1.0, 3.1)	
1 051101005	Any	High	39 (11.2)	28 (11.2)			1.7(1.0, 3.1) 1.2(0.7, 2)	
	Any	low	28 (8.0)	28 (11.2) 14 (5.6)	2.0	1.9	1.2(0.7, 2) 2.5(1.1, 5.7)	0.6 (-1.2, 2.4)
	<u> </u>	10W	<u>20 (0.0)</u>			1.9	2.3(1.1, 3.7)	0.0(-1.2, 2.4)

TABLE S15. Combinations of Agricultural Pesticide Exposure and Maternal Folic Acid and Vitamin B6 Intake the First Month of Pregnancy in Relation to Risk for Autism Spectrum Disorders (ASD) using a 1250 m Buffer

Abbreviations: CI, confidence interval; OR, odds ratio; RERI, relative excess risk due to interaction.

^a During the period 3 months before or after conception.

^b Average daily intake during first month of pregnancy. 'High' = $800 + \mu g$ folic acid and/or 2.83 mg vitamin B6.

'Low = $< 800 \ \mu g$ folic acid and $< 2.83 \ mg$ vitamin B6.

- ^c Expected combined OR for multiplicative model calculated as the product of the ORs for no pesticide exposure and low folic acid/vitamin B6, pesticide exposure and high folic/vitamin B6.
- ^d Expected combined OR for additive model calculated as 1 + (the OR for no pesticide exposure and low folic acid/vitamin B6 1) + (the OR for pesticide exposure and high folic acid/vitamin B6 1).
- ^e ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log) intake during the first month of pregnancy.

		Maternal Folic	ASD	Typically Developing	Expected Joint OR: Multiplicative	Expected Joint OR: Additive	
Pesticide Exposure		Acid Intake ^a	No. (%)	No. (%)	Model ^b	Model ^c	OR ^d (95% CI)
ny Household,	None	$800 + \mu g$	40 (18.3)	38 (23.3)			1.0
gricultural or		< 800 µg	44 (20.1)	29 (17.8)			1.2 (0.5, 2.7)
Occupational	Any	$800 + \mu g$	71 (32.4)	59 (36.2)			1.3 (0.7, 2.3)
Pesticides ^e		< 800 µg	64 (29.2)	37 (22.7)	1.6	1.5	1.7 (0.8, 3.5)

^d ORs adjusted for home ownership, child's birth year, and maternal vitamin D (natural log), vitamin B6, and folic acid intake during the first month of pregnancy.

^e Any household indoor or outdoor pesticide exposure during pregnancy; or agricultural pesticide exposure months 3 months before through 3rd month of pregnancy; or regular (vs. some or none) occupational pesticide exposure during entire index period (month 3 months before through 9th month of pregnancy).