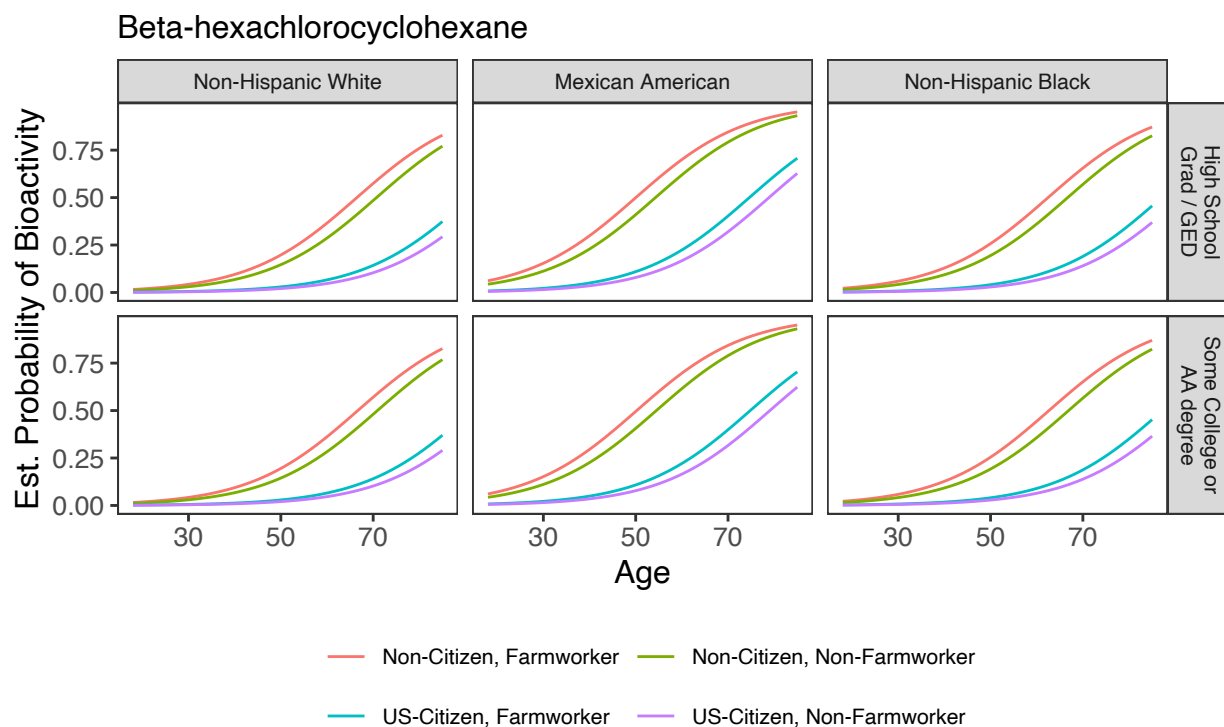
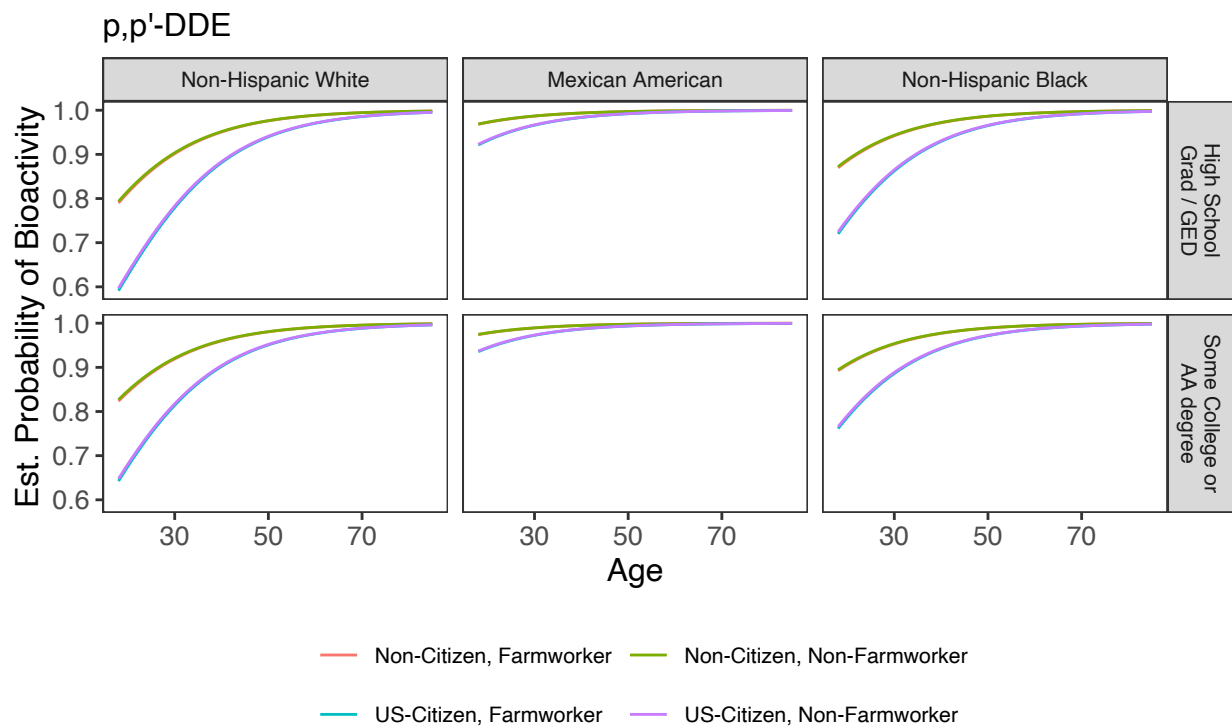


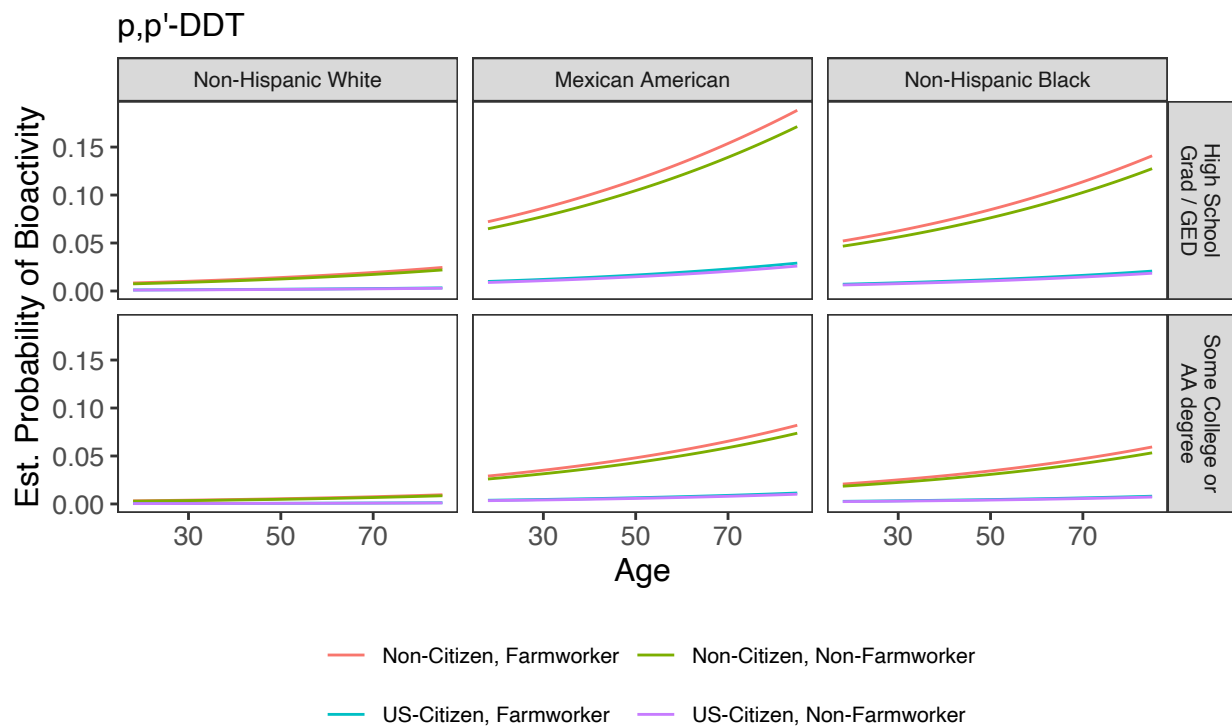
## Supplementary Figures



*Supplementary Figure 1.* Plot of estimated probability of having a bioactive concentration of beta-hexachlorocyclohexane versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

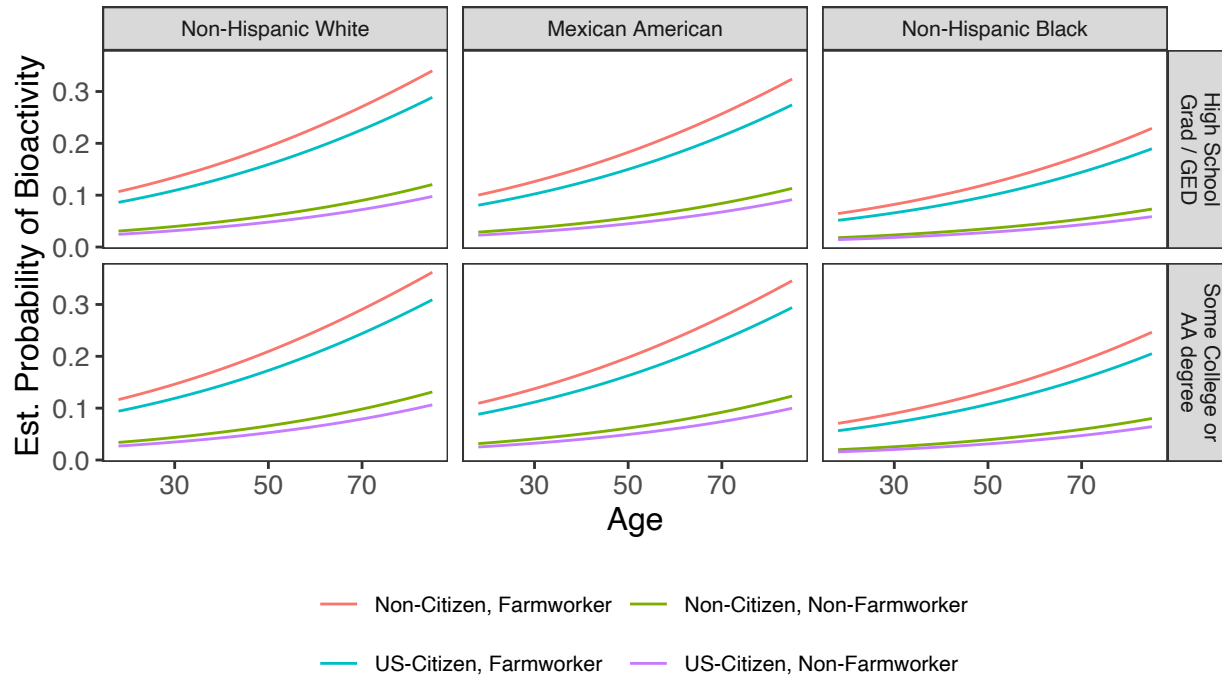


*Supplementary Figure 2.* Plot of estimated probability of having a bioactive concentration of p,p'DDE versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

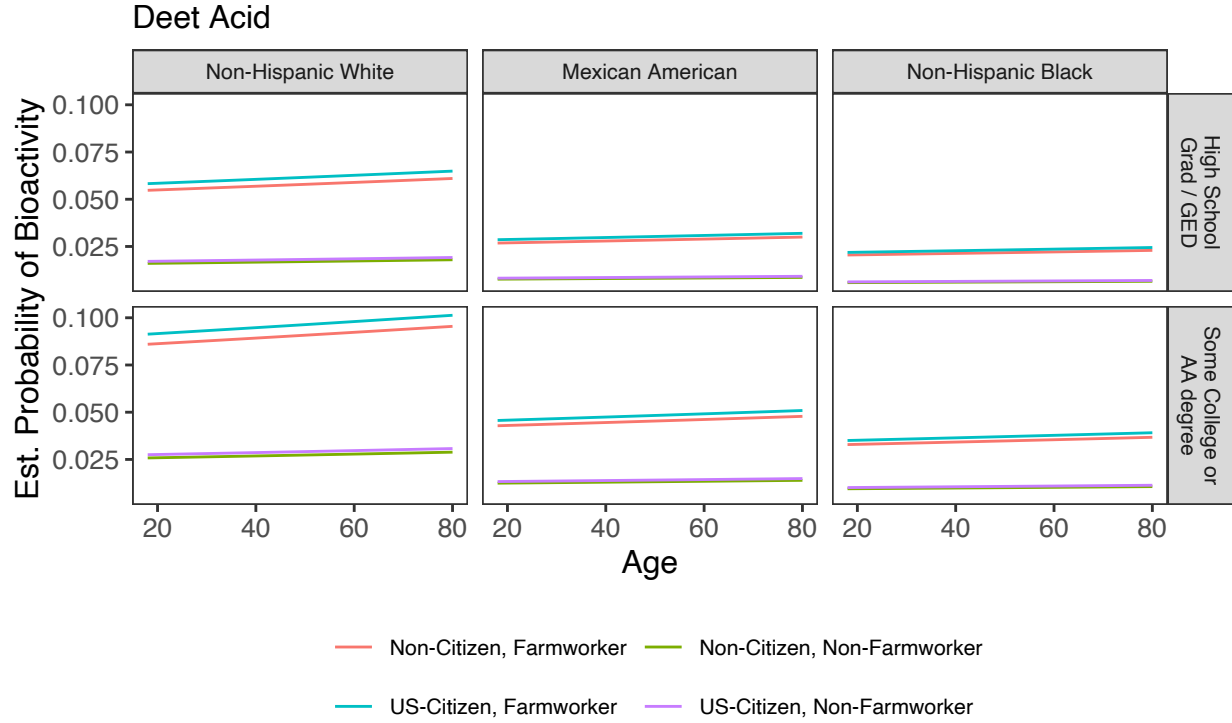


*Supplementary Figure 3.* Plot of estimated probability of having a bioactive concentration of p,p'-DDT versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

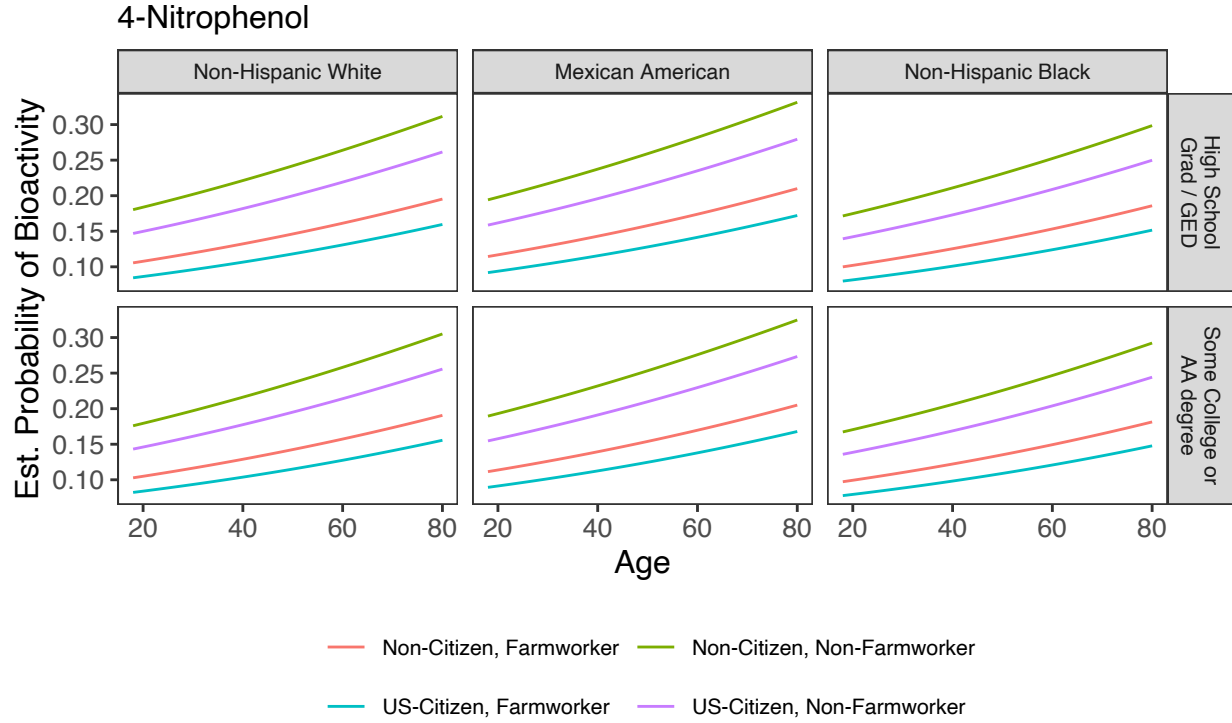
## 2,4-Dichlorophenoxyacetic Acid



*Supplementary Figure 4.* Plot of estimated probability of having a bioactive concentration of 2,4-dichlorophenoxyacetic acid versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

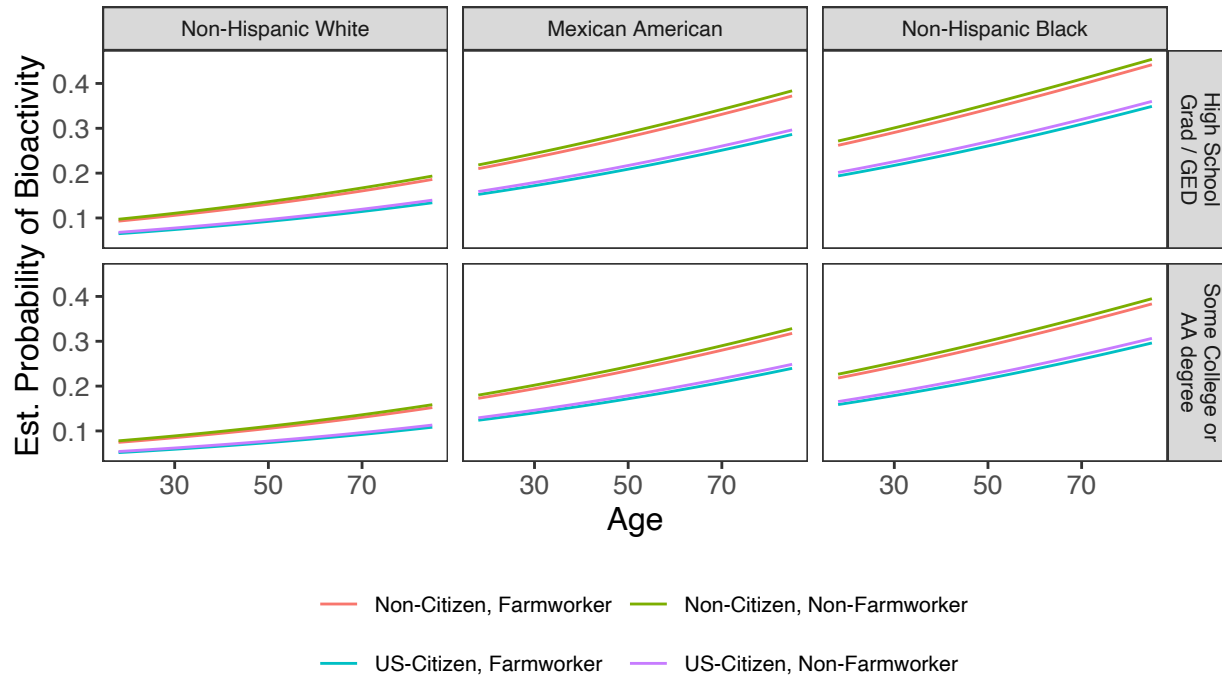


Supplementary Figure 5. Plot of estimated probability of having a bioactive concentration of DEET acid versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

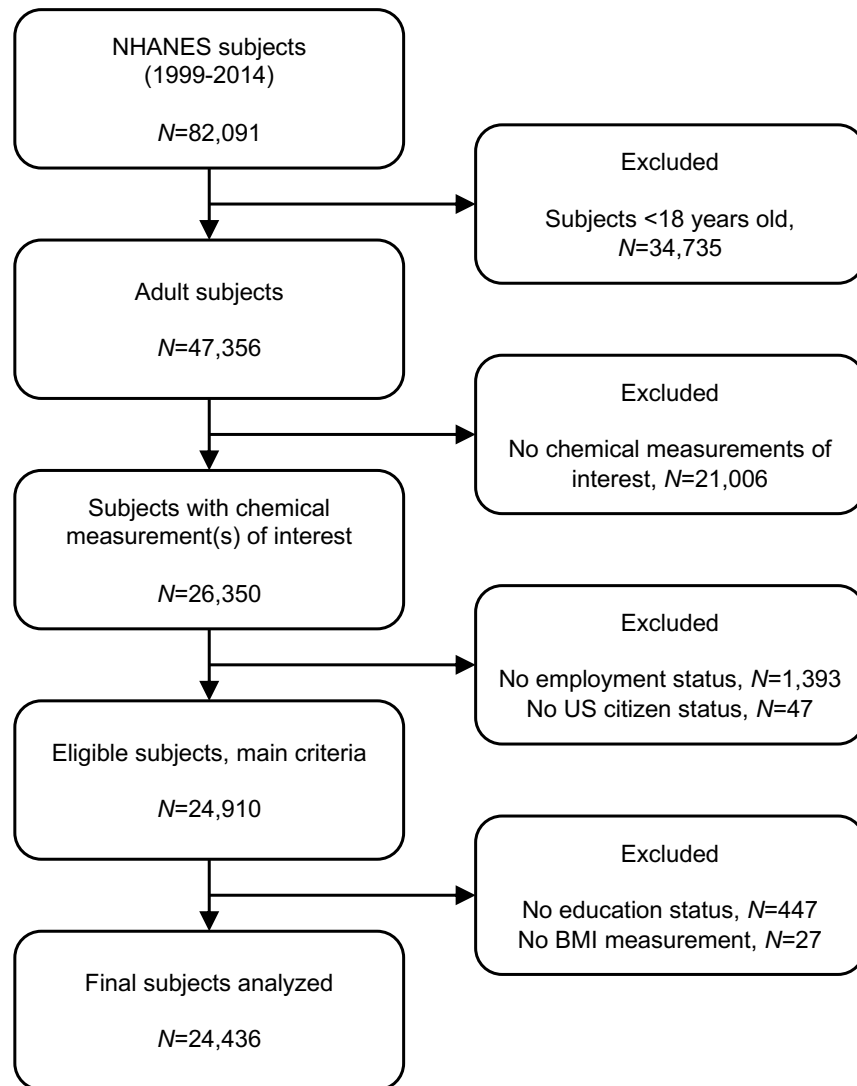


*Supplementary Figure 6.* Plot of estimated probability of having a bioactive concentration of 4-nitrophenol versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.

## 2,5-Dichlorophenol



Supplementary Figure 7. Plot of estimated probability of having a bioactive concentration of 2,5-dichlorophenol versus age, given farmworker and US-citizen status. Subsets of NHANES subjects are shown by race/ethnicity and education status.



Supplementary Figure 8. Study population flow chart of NHANES subjects included in the analysis.



## Supplementary Tables

Supplementary Table 1 Detectability of Chemicals by Work Category

Comment Code	Chemical Name	Non-Farmworkers			Farmworkers			p-value
		Below LOD	Above LOD	% Above LOD	Below LOD	Above LOD	% Above LOD	
LBXPDE	p,p'-DDE	7	4455	99.84	-	274	100.00	1.000
URX14D	2,5-Dichlorophenol	157	8513	98.19	7	278	97.54	0.369
URXDCE	2,4-Dichlorophenol	1076	7594	87.59	42	243	85.26	0.237
LBXTNA	Trans-nonachlor	609	3828	86.27	25	245	90.74	0.035
URXCPM	3,5,6-Trichloropyridinol	903	5536	85.98	47	216	82.13	0.086
URXDEA	Deet acid	1327	5811	81.41	28	164	85.42	0.187
URXOPM	3-Phenoxybenzoic acid	1537	6501	80.88	71	243	77.39	0.126
LBXOXY	Oxychlorane	1036	3134	75.16	37	219	85.55	8.87 e-05
URXPAR	4-Nitrophenol	2049	5862	74.10	130	175	57.38	7.50 e-10
LBXDIE	Dieldrin	849	2144	71.63	51	144	73.85	0.566
LBXBHC	Beta-hexachlorocyclohexane	1350	3067	69.44	53	215	80.22	1.48 e-04
URX24D	2,4-Dichlorophenoxyacetic acid	3713	5825	61.07	165	227	57.91	0.224
LBXHPE	Heptachlor epoxide	1950	2171	52.68	107	153	58.85	0.055
LBXPDT	p,p'-DDT	2164	2047	48.61	109	155	58.71	1.49 e-03
<i>Below 48% Detectable</i>								
URXCCC	Cis Dichlorovinyl-Dimethyl Carboxylic acid	1667	1040	38.42	101	64	38.79	0.934
LBXHCB	Hexachlorobenzene	2703	1572	36.77	167	99	37.22	0.896
URXALA	Alachlor mercaptan	613	334	35.27	31	17	35.42	1.000
URXPCP	Pentachlorophenol	1016	486	32.36	51	29	36.25	0.465
URX1TB	2,4,5-Trichlorophenol	4781	2221	31.72	156	84	35.00	0.291
LBXMIR	Mirex	3107	1248	28.66	196	73	27.14	0.627
URX3TB	2,4,6-Trichlorophenol	5003	1999	28.55	177	63	26.25	0.468
URXMAL	Malathion Diacid	2079	783	27.36	82	33	28.70	0.750
URXOPP	O-Phenyl Phenol	5227	1775	25.35	168	72	30.00	0.114
URXOXY	Oxypyrimidine	4226	1121	20.97	121	26	17.69	0.410

URXTCC	Desisopropyl Atrazine	6348	1593	20.06	240	70	22.58	0.279
URXDHD	Desethyl Hydroxy Deet	6345	808	11.30	157	33	17.37	0.015
URXETU	Ethylenethio urea	4453	428	8.77	161	12	6.94	0.492
URX4FP	Fluoro-Phenoxybenzoic acid	7478	591	7.32	296	16	5.13	0.180
URXDEE	DEET	9264	618	6.25	327	33	9.17	0.036
URXDPY	Diethylaminomethylpyrimidinol/One	1616	106	6.16	109	6	5.22	0.841
URXMET	Metolachlor Mercapturate	1690	65	3.70	116	4	3.33	1.000
URXCMH	Chloro-Hydro-Meth-Chromen-One/ OI	1647	62	3.63	114	3	2.56	0.796
LBXODT	o,p'-DDT	4029	139	3.33	251	11	4.20	0.478
URXCBF	Carbofuranphenol	4109	129	3.04	237	9	3.66	0.567
URX25T	2,4,5-Trichlorophenoxyacetic acid	5926	165	2.71	310	6	1.90	0.476
URXACE	Acetochlor Mercapturate	1686	43	2.49	118	1	0.84	0.361
URXAPE	Acephate	4919	92	1.84	179	4	2.19	0.582
LBXGHC	Gamma-hexachlorocyclohexane	4240	70	1.62	258	8	3.01	0.135
URXATZ	Atrazine mercapture	4399	50	1.12	206	4	1.90	0.307
URXCB3	Deisopropyl Atrazine Mercapture	4474	36	0.80	223	2	0.89	0.702
URXDCZ	Diaminochloroatrazine	1821	7	0.38	45	1	2.17	0.181
URXPPX	2-Isopropoxyphenol	4163	16	0.38	237	4	1.66	0.021
URXMMI	Methamidaphos	5004	19	0.38	176	1	0.56	0.500
URXMTO	Dimethoate	5080	13	0.26	182	-	0.00	1.000
URXPTU	Propylenethio urea	5086	9	0.18	185	-	0.00	1.000
LBXALD	Aldrin	3063	5	0.16	196	1	0.51	0.312
URXEMM	Ethametsulfuron Methyl	4902	8	0.16	176	-	0.00	1.000
URXNOS	Nicosulfuron	4845	7	0.14	176	-	0.00	1.000
URXDTZ	Desethyl Atrazine	1753	2	0.11	44	1	2.22	0.073
LBXEND	Endrin	2913	3	0.10	191	1	0.52	0.225
URXSIS	Desisopropyl Atrazine	1722	1	0.06	44	-	0.00	1.000
URXSIM	Desisopropyl Atrazine Mercapturate	1752	1	0.06	45	1	2.17	0.051
URXOMO	O-methoate	5097	2	0.04	182	-	0.00	1.000
URXCHS	Chloro Sulfuron	4725	1	0.02	169	-	0.00	1.000
URXMTM	Metsulfuron Methyl	4964	1	0.02	180	-	0.00	1.000
URXSSF	Sulfosulfuron	4999	1	0.02	181	-	0.00	1.000

URXOXS	Oxasulfuron	5013	1	0.02	181	-	0.00	1.000
URXAAZ	Atrazine	1828	-	0.00	46	-	0.00	1.000
URXBSM	Bensulfuron Methyl	4974	-	0.00	181	-	0.00	1.000
URXFRM	Foramsulfuron	4780	-	0.00	174	-	0.00	1.000
URXHLS	Halosulfuron	4903	-	0.00	181	-	0.00	1.000
URXMSM	Mesosulfuron Methyl	5020	-	0.00	181	-	0.00	1.000
URXPIM	Primisulfuron Methyl	4735	-	0.00	174	-	0.00	1.000
URXPRO	Prosulfuron	4843	-	0.00	176	-	0.00	1.000
URXRIM	Rimsulfuron	4938	-	0.00	175	-	0.00	1.000
URXSMM	Sulfometuron Methyl	4759	-	0.00	169	-	0.00	1.000
URXTHF	Thifensulfuron Methyl	4974	-	0.00	179	-	0.00	1.000
URXTRA	Triasulfuron	4872	-	0.00	178	-	0.00	1.000
URXTRN	Triflusulfuron Methyl	4967	-	0.00	183	-	0.00	1.000

Data obtained from NHANES, an abbreviation for the National Health and Nutrition Examination Survey, a cross-sectional study of people residing in the United States and maintained by the Centers for Disease Control and Prevention. The above chemicals are included based on respondent (unique SEQN) who also had occupation data and laboratory results data collected.

Supplementary Table 2 Unadjusted Logistic Regression Table

Chemical & Comparison	ESS	N	OR (95% CI)		t	ROC	p	p FDR	
<b>β-Hexachlorocyclohexane A</b>									
Farmworker vs Non	245	4366	1.45	(0.87, 2.40)	1.47	0.58	0.15	0.24	
Non-US Citizen vs US Citizen			3.72	(2.64, 5.23)	7.75		1.26e-09	2.01e-08	*
<b>Dieldrin</b>									
Farmworker vs Non	182	2984	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>Heptachlor Epoxide</b>									
Farmworker vs Non	237	4068	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>p,p'-DDE</b>									
Farmworker vs Non	250	4411	1.25	(0.80, 1.96)	1.00	0.53	0.32	0.43	
Non-US Citizen vs US Citizen			3.44	(1.97, 6.00)	4.47		5.81e-05	1.86e-04	*
<b>p,p'-DDT</b>									
Farmworker vs Non	239	4153	1.16	(0.38, 3.54)	0.27	0.80	0.79	0.84	
Non-US Citizen vs US Citizen			26.87	(10.60, 68.13)	7.13		9.46e-09	7.57e-08	*
<b>2,4-Dichlorophenoxyacetic Acid</b>									
Farmworker vs Non	339	10800	3.86	(2.40, 6.20)	5.65	0.54	1.36e-07	5.45e-07	*
Non-US Citizen vs US Citizen			0.94	(0.66, 1.35)	-0.32		0.75	0.84	
<b>DEET Acid</b>									
Farmworker vs Non	152	7149	3.61	(1.25, 10.42)	2.42	0.54	0.02	0.04	*
Non-US Citizen vs US Citizen			0.64	(0.29, 1.40)	-1.14		0.26	0.37	
<b>3-Phenoxybenzoic Acid</b>									
Farmworker vs Non	256	9225	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>4-Nitrophenol</b>									
Farmworker vs Non	250	9178	0.59	(0.41, 0.85)	-2.86	0.52	5.21e-03	0.01	*
Non-US Citizen vs US Citizen			1.27	(1.04, 1.54)	2.37		0.02	0.04	*
<b>3,5,6-Trichloropyridinol</b>									
Farmworker vs Non	212	7707	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-

<b>2,5-Dichlorophenol</b>									
Farmworker vs Non	278	10396	1.01	(0.75, 1.37)	0.07	0.53	0.95	0.95	
Non-US Citizen vs US Citizen			2.06	(1.63, 2.60)	6.13		2.12e-08	1.13e-07	*
<b>2,4-Dichlorophenol</b>									
Farmworker vs Non	278	10396	0.76	(0.41, 1.40)	-0.88	0.55	0.38	0.47	
Non-US Citizen vs US Citizen			2.61	(1.53, 4.45)	3.58		5.56e-04	1.48e-03	*

Logistic model testing the odds of having a bioactive measurement of a given chemical. A bioactive measurement is defined as a positive hit call.

Supplementary Table 3 Adjusted Logistic Regression Table

Chemical & Comparison	ESS	N	OR (95% CI)		t	ROC	p	p FDR	
<b>β-Hexachlorocyclohexane A</b>									
Farmworker vs Non	238	4257	1.44	(0.85, 2.42)	-1.39	0.87	0.17	0.28	
Non-US Citizen vs US Citizen			8.10	(4.44, 14.80)	7.00		1.07e-07	1.33e-06	*
<b>Dieldrin</b>									
Farmworker vs Non	175	2893	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>Heptachlor Epoxide</b>									
Farmworker vs Non	229	3965	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>p,p'-DDE</b>									
Farmworker vs Non	242	4302	0.98	(0.65, 1.47)	-0.11	0.80	0.91	0.91	
Non-US Citizen vs US Citizen			2.60	(1.31, 5.16)	2.80		8.91e-03	0.02	*
<b>p,p'-DDT</b>									
Farmworker vs Non	231	4047	1.12	(0.38, 3.32)	0.21	0.92	0.83	0.91	
Non-US Citizen vs US Citizen			7.75	(2.22, 27.07)	3.30		2.57e-03	0.01	*
<b>2,4-Dichlorophenoxyacetic Acid</b>									
Farmworker vs Non	330	10652	3.76	(2.37, 5.96)	5.69	0.73	1.66e-07	1.33e-06	*
Non-US Citizen vs US Citizen			1.27	(0.80, 2.00)	1.03		0.30	0.40	
<b>DEET Acid</b>									
Farmworker vs Non	151	7073	3.55	(1.32, 9.58)	2.55	0.71	0.01	0.03	*
Non-US Citizen vs US Citizen			0.94	(0.43, 2.05)	-0.17		0.87	0.91	
<b>3-Phenoxybenzoic Acid</b>									
Farmworker vs Non	250	9108	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-
<b>4-Nitrophenol</b>									
Farmworker vs Non	244	9064	0.54	(0.36, 0.79)	-3.15	0.77	2.36e-03	0.01	*
Non-US Citizen vs US Citizen			1.28	(1.01, 1.62)	2.03		0.05	0.09	
<b>3,5,6-Trichloropyridinol</b>									
Farmworker vs Non	206	7610	-	-	-	-	-	-	-
Non-US Citizen vs US Citizen			-	-	-	-	-	-	-

<b>2,5-Dichlorophenol</b>									
Farmworker vs Non	274	10256	0.95	(0.71, 1.27)	-0.34	0.74	0.73	0.91	
Non-US Citizen vs US Citizen			1.48	(1.12, 1.94)	2.82		6.10e-03	0.02	*
<b>2,4-Dichlorophenol</b>									
Farmworker vs Non	274	10256	0.70	(0.37, 1.32)	-1.12	0.79	0.27	0.39	
Non-US Citizen vs US Citizen			1.75	(0.81, 3.77)	1.45		0.15	0.27	

Logistic model testing the odds of having a bioactive measurement of a given chemical. Adjusted model includes adjustments for BMI, age, gender, education, and ethnicity. Log molarity of creatine is also added for urinary measurements.

Supplementary Table 4 Adjusted Linear Regression Table

Chemical & Comparison	ESS	N	$\beta$ (95% CI)		t	R <sup>2</sup>	p	p FDR
<b><math>\beta</math>-Hexachlorocyclohexane A</b>								
Farmworker vs Non	238	4257	-0.07	(-0.41, 0.28)	-0.40	0.42	0.70	0.84
Non-US Citizen vs US Citizen			0.89	(0.11, 1.66)	2.30		0.03	0.10
<b>Dieldrin</b>								
Farmworker vs Non	175	2893	-0.07	(-0.44, 0.30)	-0.39	0.20	0.70	0.84
Non-US Citizen vs US Citizen			-0.05	(-0.21, 0.11)	-0.62		0.54	0.78
<b>Heptachlor Epoxide</b>								
Farmworker vs Non	229	3965	0.03	(-0.10, 0.16)	0.49	0.26	0.62	0.83
Non-US Citizen vs US Citizen			-0.09	(-0.28, 0.10)	-1.01		0.32	0.60
<b>p,p'-DDE</b>								
Farmworker vs Non	242	4302	0.22	(-0.05, 0.48)	1.64	0.41	0.11	0.27
Non-US Citizen vs US Citizen			0.91	(0.61, 1.21)	6.09		1.26e-06	1.01e-05 *
<b>p,p'-DDT</b>								
Farmworker vs Non	231	4047	0.05	(-0.32, 0.42)	0.26	0.36	0.80	0.87
Non-US Citizen vs US Citizen			1.30	(0.97, 1.63)	7.94		9.39e-09	2.25e-07 *
<b>2,4-Dichlorophenoxyacetic Acid</b>								
Farmworker vs Non	330	10652	0.42	(-0.18, 1.03)	1.39	0.29	0.17	0.36
Non-US Citizen vs US Citizen			0.12	(-0.28, 0.53)	0.60		0.55	0.78
<b>DEET Acid</b>								
Farmworker vs Non	151	7073	-0.32	(-2.48, 1.84)	-0.30	0.49	0.77	0.87
Non-US Citizen vs US Citizen			-0.15	(-1.80, 1.50)	-0.18		0.86	0.89
<b>3-Phenoxybenzoic Acid</b>								
Farmworker vs Non	250	9108	-0.16	(-0.67, 0.36)	-0.60	0.15	0.55	0.78
Non-US Citizen vs US Citizen			-0.38	(-0.75, -0.02)	-2.09		0.04	0.11
<b>4-Nitrophenol</b>								
Farmworker vs Non	244	9064	-0.51	(-0.70, -0.32)	-5.42	0.14	7.03e-07	8.43e-06 *
Non-US Citizen vs US Citizen			0.18	(0.05, 0.32)	2.67		9.44e-03	0.04 *
<b>3,5,6-Trichloropyridinol</b>								
Farmworker vs Non	206	7610	-0.09	(-0.30, 0.13)	-0.78	0.34	0.44	0.75
Non-US Citizen vs US Citizen			0.00	(-0.17, 1.18)	0.04		0.97	0.97



<b>2,5-Dichlorophenol</b>										
Farmworker vs Non	274	10256	-0.49	(-0.80, -0.18)	-3.18	0.18	2.13e-03	0.01	*	
Non-US Citizen vs US Citizen			0.62	(0.04, 1.19)	2.14		0.04	0.11		
<b>2,4-Dichlorophenol</b>										
Farmworker vs Non	274	10256	-0.50	(-0.79, -0.21)	-3.46	0.18	9.00e-04	5.40e-03	*	
Non-US Citizen vs US Citizen			0.29	(-0.16, 0.74)	1.29		0.20	0.40		

Linear model testing the unit change in molarity of a given chemical. Adjusted model includes adjustments for BMI, age, gender, education, and ethnicity. Log molarity of creatine is also added for urinary measurements.

Supplementary Table 5 Non-parametric Wilcoxon-Mann-Whitney U Table

<b>Chemical/ Comparison</b>	<b>ESS</b>	<b>N</b>	<b>t</b>	<b>Df</b>	<b>ROC</b>	<b>p</b>	<b>p FDR</b>	
<b>β-Hexachlorocyclohexane A</b>								
Farmworker vs Non	245	4375	1.9537	43	0.5554	0.0573	0.0982	
Non-US Citizen vs US Citizen	470	4605	11.9385	43	0.6802	3.0611e-15	7.3467e-14	*
<b>Dieldrin</b>								
Farmworker vs Non	182	2986	0.8631	29	0.5288	0.3952	0.5269	
Non-US Citizen vs US Citizen	326	3119	-3.3731	29	0.3807	2.1244e-03	6.3731e-03	*
<b>Heptachlor Epoxide</b>								
Farmworker vs Non	237	4076	1.3726	43	0.5375	0.1770	0.2499	
Non-US Citizen vs US Citizen	441	4298	-3.7089	43	0.4614	5.9220e-04	2.0304e-03	*
<b>p,p'-DDE</b>								
Farmworker vs Non	250	4421	1.6139	43	0.5519	0.1139	0.1708	
Non-US Citizen vs US Citizen	473	4654	8.7163	43	0.6941	4.7005e-11	5.6406e-10	*
<b>p,p'-DDT</b>								
Farmworker vs Non	238	4161	-0.6466	43	0.5222	0.5213	0.6256	
Non-US Citizen vs US Citizen	447	4391	6.2875	43	0.6934	1.3952e-07	8.3714e-07	*
<b>2,4-Dichlorophenoxyacetic Acid</b>								
Farmworker vs Non	338	10813	1.9699	107	0.5286	0.0514	0.0982	
Non-US Citizen vs US Citizen	1254	11394	-2.9099	107	0.4756	4.3989e-03	0.0117	*
<b>DEET Acid</b>								
Farmworker vs Non	152	7156	1.7648	63	0.5616	0.0824	0.1319	
Non-US Citizen vs US Citizen	820	7524	-2.2939	63	0.4502	0.0251	0.0549	*
<b>3-Phenoxybenzoic Acid</b>								
Farmworker vs Non	256	9239	-0.1428	92	0.4728	0.8867	0.9673	
Non-US Citizen vs US Citizen	1077	9721	-0.8146	92	0.4850	0.4174	0.5273	
<b>4-Nitrophenol</b>								
Farmworker vs Non	250	9192	-4.3490	92	0.4139	3.5295e-05	1.4118e-04	*
Non-US Citizen vs US Citizen	1078	9677	2.6750	92	0.5265	8.8461e-03	0.0212	*
<b>3,5,6-Trichloropyridinol</b>								
Farmworker vs Non	212	7719	-0.0665	75	0.5009	0.9471	0.9883	
Non-US Citizen vs US Citizen	903	8105	-1.9613	75	0.4894	0.0536	0.0982	

<b>2,5-Dichlorophenol</b>								
Farmworker vs Non	279	10415	0.0051	93	0.5061	0.9960	0.9960	
Non-US Citizen vs US Citizen	1115	10958	5.7059	93	0.5780	1.3668e-07	8.3714e-07	*
<b>2,4-Dichlorophenol</b>								
Farmworker vs Non	279	10415	-0.5476	93	0.5128	0.5853	0.6689	
Non-US Citizen vs US Citizen	1115	10958	5.0403	93	0.5705	2.2812e-06	1.0950e-05	*

Wilcoxon-Mann-Whitney U ranks molarity of chemicals to inquire if two groups are statistically different from one another. Chemicals are considered here as the log molarity of the chemical ( $\mu\text{mol/L}$ ) for blood measurements and log ratio of the molarity of the chemical with the log molarity of creatine ( $\mu\text{mol/L}$ ) for urinary measurements.

Supplementary Table 6 Toxcast Assay Intended Target Family Frequencies, by Pesticide

Intended Target Family	2,4-D	4-Nitrophenol	$\beta$ -HCH	p,p'-DDE	p,p'-DDT	Total
cell cycle	7	28	6	74	120	235
nuclear receptor	8	4	12	102	58	184
DNA binding	2	0	3	64	27	96
cytokine	0	0	0	29	33	62
cell adhesion molecules	0	0	0	13	14	27
cell morphology	2	2	1	6	8	19
GPCR	1	0	0	4	4	9
protease	0	1	0	5	3	9
histones	0	0	0	2	2	4
hydrolase	0	2	1	0	1	4
malformation	1	1	0	1	1	4
oxidoreductase	1	3	0	0	0	4
protease inhibitor	0	0	0	2	2	4
steroid hormone	3	1	0	0	0	4
transporter	1	0	0	1	1	3
growth factor	0	0	0	1	1	2
kinase	0	0	0	1	1	2
phosphatase	1	1	0	0	1	3
CYP	0	0	1	0	0	1
misc protein	0	0	0	0	1	1
<i>Total</i>	<i>27</i>	<i>43</i>	<i>24</i>	<i>305</i>	<i>278</i>	<i>677</i>

Focusing on bioactive chemicals only, frequencies of intended target family for each chemical is presented here. Intended target family describes the category of the assay cellular effect. Bioactive is described as having a positive hit-call for the assay.