Environ Health Perspect

DOI: 10.1289/EHP3644

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Supplemental Material

Longitudinal, Seasonal, and Occupational Trends of Multiple Pesticides in House Dust

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Table S1: Longitudinal changes in demographic characteristics of farmworkers and non-farmworkers between the two sampling periods.

Demographic Characteristic	Farmworker (FW)	Non-Farmworker (NFW)
Marital Status[a]	FW Count (n=40)	NFW Count (n=35)
Married / living with partner		
2005	40	27
2011	35	29
Divorced/Not married/Widowed		
2005	0	8
2011	5	5
Number of kids under 18	FW Mean and SD	NFW Mean and SD
2005	2.98 (1.25)	2.77 (1.19)
2011	3.08 (0.92)	2.97 (1.03)
Income[b]	FW Count (n=40)	NFW Count (n=35)
< $15,000		
2005	11	10
2011	7	6
≥ 15,000 <25,000		
2005	19	9
2011	9	4
≥25,000 to <35,000		
2005	10	10
2011	14	9
≥35,000 < 50,000		
2005	0	5
2011	8	11
≥ $50,000		
2005	0	0
2011	2	3
Housing[c]		
Single Family House	FW Count (n=40)	NFW Count (n=35)
2005	24	29
2011	31	31
Apartment		
2005	5	4
2011	4	3
Labor Camp		
2005	2	0
2011	1	0
Other		
2005	9	2
2011	2	0

[a]One NFW nonresponse in 2011, [b]One NFW nonresponse is 2005 and two NFW nonresponse in 2011, [c]Two FW nonresponses in 2011 and One NFW nonresponse in 2011

Table S2: Summary statistics for the mass of dust collected using the Nilfisk and Metropolitan vacuums.

Method	Median	25%	75%	100%
Nilfisk Vacuum	1.01 g	1.00 g	1.01 g	1.01 g
Metropolitan Vacuum	0.86 g	0.84 g	0.87 g	0.92 g

Table S3: Average percent recovery (Average%) and coefficient of variation (CV%) for all pesticides detected in >5% of samples of all house dust analysed.

	Spike Recovery	
Analyte	Average %	CV%
2,4-D	120%	54%
Acetamiprid	89%	8%
AZM	99%	14%
Azoxystrobin	99%	12%
Boscalid	92%	12%
Carbaryl	124%	16%
Chlorpyrifos	129%	16%
Clothianidin	75%	7%
Coumaphos	86%	11%
Cyphenothrin	115%	25%
Diazinon	87%	6%
Dichlorvos	87%	19%
Diuron	84%	8%
Dodine	113%	67%
Hexythiazox	115%	30%
Imidacloprid	75%	25%
Imiprothrin	133%	26%
Malathion	95%	6%
MCPA	96%	14%
MCPP	166%	47%
Methamidophos	105%	9%
Methomyl	83%	12%
Myclobutanil	82%	15%
Norflurazon	87%	15%
Novaluron	92%	25%
Pendimethalin	83%	10%
Permethrin	48%	85%
Phosmet	88%	11%
Piperonyl Butoxide	88%	43%
Progargite	41%	10%
Propiconazole	72%	5%
Propoxur	81%	11%
Pyridaben	110%	11%
Pyriproxyfen	110%	12%
S-Bioallethrin	87%	14%
Na_o_Phenylphenate	68%	81%
Spinosyn A	106%	8%
Spinosyn D	101%	7%
Sumithrin	97%	58%
Tebuconazole	81%	5%
Tetrachlorvinphos	102%	18%

Tetramethrin	96%	15%
Thiophanatemethyl	43%	32%
Triclosan	66%	39%
Trifloxystrobin	78%	12%
Triflumizole	64%	7%

Table S4: Detection rate by year for the 47 pesticides that have a detection rate 5% or more among all house dust samples analyzed. Detection rate, sample size and selected percentile (ng/g) are shown.

		2005 Thinning Season					2011 Thinning Season				
Class	Compound	n	Detection Rate (%)	50% (ng/g)	75% (ng/g)	95% (ng/g)	n	Detection Rate (%)	50% (ng/g)	75% (ng/g)	95% (ng/g)
Organophosphate	Phosmet	75	84%	76	272	836	57	88%	21	61	436
Organophosphate	Azinphos-methyl	75	85%	163	757	2520	57	79%	42	152	586
Organophosphate	Diazinon	75	73%	3	8	41	57	75%	2	8	43
Organophosphate	Malathion	75	76%	17	79	543	57	77%	8	32	366
Organophosphate	Chlorpyrifos	75	45%	<LOD	30	149	57	35%	<LOD	9	103
Organophosphate	Dichlorvos	68	3%	<LOD	<LOD	<LOD	57	18%	<LOD	<LOD	4
Organophosphate	Methamidophos	68	13%	<LOD	<LOD	5	57	16%	<LOD	<LOD	14
Organophosphate	Tetrachlorvinphos	63	0%	<LOD	<LOD	<LOD	57	14%	<LOD	<LOD	147
Organophosphate	Coumaphos	68	12%	<LOD	<LOD	5	57	5%	<LOD	<LOD	<LOD
N-Methyl Carbamate	Carbaryl	68	93%	108	757	2545	57	88%	95	615	2050
N-Methyl Carbamate	Propoxur	68	82%	4	14	88	57	82%	4	9	52
N-Methyl Carbamate	Methomyl	68	15%	<LOD	<LOD	3	57	7%	<LOD	<LOD	<LOD
Neonicotinoid	Acetamiprid	68	56%	2	8	62	57	54%	<LOD	6	60
Neonicotinoid	Imidacloprid	68	19%	<LOD	<LOD	264	57	9%	<LOD	<LOD	23
Neonicotinoid	Clothianidin	68	0%	<LOD	<LOD	<LOD	57	14%	<LOD	<LOD	6
Pyrethroid	Permethrin	63	79%	190	1069	6632	57	65%	244	1450	14619
Pyrethroid	Tetramethrin	63	41%	<LOD	64	3876	57	49%	<LOD	66	1435
Pyrethroid	Cyphenothrin	63	13%	<LOD	<LOD	66	57	18%	<LOD	<LOD	59
Pyrethroid	S-Bioallethrin	63	19%	<LOD	<LOD	1629	57	16%	<LOD	<LOD	226
Pyrethroid	Sumithrin	63	13%	<LOD	<LOD	177	57	11%	<LOD	<LOD	453
Pyrethroid	Imiprothrin	63	14%	<LOD	<LOD	31	57	11%	<LOD	<LOD	84
Chlorophenol	Triclosan	63	67%	68	147	1152	57	93%	1210	2407	7276
Chlorophenoxy acid or ester	2_4D	63	68%	65	172	1618	57	74%	64	265	1159
Chlorophenoxy acid or ester	MCPP	63	60%	12	39	155	57	61%	6	36	182
Chlorophenoxy acid or ester	MCPA	63	5%	<LOD	<LOD	<LOD	57	35%	<LOD	5	59

		2005 Thinning Season					2011 Thinning Season				
Class	Compound	n	Detection Rate (%)	50% (ng/g)	75% (ng/g)	95% (ng/g)	n	Detection Rate (%)	50% (ng/g)	75% (ng/g)	95% (ng/g)
Azole	Tebuconazole	68	68%	1	3	13	57	65%	2	6	52
Azole	Propiconazole	68	49%	<LOD	5	45	57	70%	2	9	76
Azole	Myclobutanil	63	52%	9	67	177	57	40%	<LOD	47	206
Azole (Benzimidazole)	Thiophanatemethyl	53	8%	<LOD	<LOD	68	34	6%	<LOD	<LOD	<LOD
Azole (Imidazole)	Triflumizole	68	74%	2	11	167	57	74%	3	12	261
Insect Growth Regulator	Pyriproxyfen	63	10%	<LOD	<LOD	17	57	33%	<LOD	<LOD	16
Insect Growth Regulator	Hexythiazox	63	2%	<LOD	<LOD	<LOD	57	19%	<LOD	<LOD	36
Strobin	Azoxystrobin	63	2%	<LOD	<LOD	<LOD	57	35%	<LOD	2	37
Strobin	Trifloxystrobin	63	10%	<LOD	<LOD	27	57	30%	<LOD	<LOD	37
Urea	Diuron	68	96%	38	56	387	57	95%	58	106	273
Urea	Novaluron	63	13%	<LOD	<LOD	100	57	25%	<LOD	<LOD	40
Pyridazinone	Pyridaben	63	27%	<LOD	6	19	57	40%	<LOD	2	24
Pyridazinone	Norflurazon	63	6%	<LOD	<LOD	39	57	11%	<LOD	<LOD	19
2,6-Dinitroaniline	Pendimethalin	68	57%	1	4	45	57	96%	6	12	58
Anilide	Boscalid	63	48%	<LOD	65	481	57	89%	161	677	2072
Guanidine	Dodine	63	54%	82	430	2584	57	91%	624	1401	13709
Macrocyclic Lactone	Spinosyn A	63	22%	<LOD	<LOD	89	57	35%	<LOD	9	213
Macrocyclic Lactone	Spinosyn D	63	17%	<LOD	<LOD	105	57	21%	<LOD	<LOD	137
Organosulphite	Propargite	63	30%	<LOD	6	62	57	2%	<LOD	<LOD	<LOD
Phenol	Na o-Phenylphenate	63	62%	108	432	2480	57	30%	<LOD	<LOD	303
Quinonline	Quinoxyfen	53	19%	<LOD	<LOD	83	34	6%	<LOD	<LOD	<LOD
Synergist	Piperonyl Butoxide	63	73%	86	260	6490	57	67%	100	730	13072

Note: The Limit of Detection (LOD) varied by batch. For chemicals run in multiple batches, multiple LODs are reported. LODs in 2005 - Azinphosmethyl = 2 , 8, 10ng/sample; Chlorpyrifos = 2, 4, 8 ng/sample; Coumaphos = 1, 4 ng/sample; Diazinon = 0.4, 2, 4 ng/sample; Dichlorvos = 2, 5, 10, 20 ng/sample; Malathion = 0.4, 4, 20 ng/sample; Methamidophos = 1, 2, 20 ng/sample; Phosmet = 0.4, 4, 20 ng/sample; Tetrachlorvinphos = 10, 20 ng/sample; Carbaryl = 1, 2 ng/sample; Methomyl = 0.4, 2, 20 ng/sample; Propoxur = 0.4, 4 ng/sample; Acetamiprid = 0.4, 4, 20 ng/sample; Clothianidin = 0.4, 2, 20 ng/sample; Imidacloprid = 1, 4, 20 ng/sample; Cyphenothrin = 20 ng/sample; Imiprothrin = 10, 20 ng/sample; Permethrin = 10, 40 ng/sample; S-Bioallethrin = 2, 20 ng/sample; Sumithrin = 20, 40 ng/sample; Tetramethrin = 2, 4 ng/sample; Hexythiazox = 4, 10 ng/sample; Pyriproxyfen = 0.4, 10 ng/sample; Novaluron = 2, 4 ng/sample; Spinosyn A = 2, 10 ng/sample; Spinosyn D = 2, 10 ng/sample; Piperonyl Butoxide = 4, 10 ng/sample; Propargite = 4, 40 ng/sample; Myclobutanil = 0.4, 10 ng/sample; Propiconazole = 0.4, 2, 8 ng/sample; Tebuconazole = 0.4, 2, 4 ng/sample; Thiophanatemethyl = 40 ng/sample; Triflumizole = 0.4, 2, 4 ng/sample; Azoxystrobin = 0.4, 4 ng/sample; Trifloxystrobin = 2, 10 ng/sample; Boscalid = 2, 20 ng/sample; Quinoxyfen = 10 ng/sample; Diuron = 2, 4 ng/sample; 2,4-D = 20 ng/sample; MCPA = 2,

4 ng/sample; MCPP = 2, 4 ng/sample; Pendimethalin = 0.4, 20 ng/sample; Norflurazon = 2, 10 ng/sample; Pyridaben = 0.4, 4 ng/sample; Triclosan = 4, 20 ng/sample; DGH = 10, 20 ng/sample; Na o-phenylphenate = 4, 20 ng/sample

LODs in 2011 - Azinphosmethyl = 2, 4, 5 ng/sample; Chlorpyrifos = 2, 4 ng/sample; Coumaphos = 0.5, 1, 4 ng/sample; Diazinon = 0.2, 0.4, 2 ng/sample; Dichlorvos = 2, 5 ng/sample; Malathion = 0.2, 0.4, 4 ng/sample; Methamidophos = 1, 2, 4 ng/sample; Phosmet = 0.2, 0.4, 4 ng/sample; Tetrachlorvinphos = 4, 5 ng/sample; Carbaryl = 0.5, 2 ng/sample; Methomyl = 0.2, 2 ng/sample; Propoxur = 0.2, 0.4 ng/sample; Acetamiprid = 0.2, 4 ng/sample; Clothianidin = 0.2, 2 ng/sample; Imidacloprid = 0.2, 0.5, 2, 4 ng/sample; Cyphenothrin = 10, 20, 200 ng/sample; Imiprothrin = 4, 5 ng/sample; Permethrin = 10, 40 ng/sample; S-Bioallethrin = 2, 4, 10 ng/sample; Sumithrin = 20 ng/sample; Tetramethrin = 0.4, 2 ng/sample; Hexythiazox = 4, 5 ng/sample; Pyriproxyfen = 0.4, 5 ng/sample; Novaluron = 2, 4 ng/sample; Spinosyn A = 2, 5 ng/sample; Spinosyn D = 2, 5 ng/sample; Piperonyl Butoxide = 4, 5, 20 ng/sample; Propargite = 2, 20, 40 ng/sample; Myclobutanil = 0.4, 2, 5 ng/sample; Propiconazole = 0.2, 2 ng/sample; Tebuconazole = 0.2, 2 ng/sample; Thiophanatemethyl = 20 ng/sample; Triflumizole = 0.2, 0.4, 2 ng/sample; Azoxystrobin = 0.4, 2 ng/sample; Trifloxystrobin = 2, 5 ng/sample; Boscalid = 4, 10 ng/sample; Quinoxyfen = 5 ng/sample; Diuron = 0.2, 2 ng/sample; 2,4-D = 2, 10 ng/sample; MCPA = 2 ng/sample; MCPP = 2 ng/sample; Pendimethalin = 0.2, 0.4 ng/sample; Norflurazon = 2, 5 ng/sample; Pyridaben = 0.4, 2 ng/sample; Triclosan = 4, 10 ng/sample; DGH*** = 20 ng/sample; Na o-phenylphenate = 2, 20 ng/sample

Table S5: Detection rate by year for 40 pesticides that had a detection rate less than 5% among all house dust samples analyzed.

Class	Compound	2005 Thinning		2011 Thinning		LOD[a] (ng/sample)
		n	Detection Rate (%)	n	Detection Rate (%)	
Organophosphate	Dimethoate	68	10%	57	0%	0.5, 1, 4, 40
Organophosphate	Methidathion	53	0%	34	6%	10, 20
Organophosphate	Naled	53	0%	34	3%	10, 20
Organophosphate	Ethoprop	53	0%	34	0%	5, 10
Organophosphate	Phorate	53	4%	34	0%	1, 2, 4
Organophosphate	Terbufos	53	0%	34	0%	5, 10
Organophosphate	MethylParathion	65	2%	34	0%	20, 40
N-Methyl Carbamate	Fenoxycarb	53	0%	34	0%	2, 4
N-Methyl Carbamate	Carbofuran	53	0%	34	0%	0.5, 1
N-Methyl Carbamate	Oxamyl	53	2%	34	0%	0.5, 1
N-Methyl Carbamate	Aldicarb	53	0%	34	0%	50, 100
N-Methyl Carbamate	Pirimicarb	53	0%	34	0%	0.2, 0.4
Neonicotinoid	Thiamethoxam	68	6%	57	7%	0.2, 0.4, 4, 20
Neonicotinoid	Thiacloprid	53	0%	34	0%	50, 100
Pyrethroid	Deltamethrin	53	4%	34	3%	2, 4
Pyrethroid	Etofenprox	53	0%	34	0%	5, 10
Chlorophenoxy acid or ester	2_4DP	63	6%	57	9%	2, 4
Chlorophenoxy acid or ester	2_4DB	53	0%	34	0%	100, 200
Azole	Triadimefon	53	0%	34	0%	5, 10
Urea	Linuron	53	0%	34	3%	0.2, 0.4
Imidazolinone	Imazapyr	53	0%	34	0%	10, 20
Imidazolinone	Imazapic	53	0%	34	0%	10, 20
Imidazolinone	Imazamox	53	0%	34	0%	100, 200
Imidazolinone	Imazethapyr	53	0%	34	0%	100, 200
Anilide	Fenhexamid	53	0%	34	0%	100, 200
Benzoic acid	Dicamba	53	0%	34	0%	100, 200
Carbazate	Bifenazate	53	0%	34	0%	10,20
Chloroacetanilide	SMetolachlor	68	7%	57	2%	0.2, 0.4, 2, 8
Dicarboximide	Flumioxazin	53	2%	34	3%	20, 40
Diphenyl Oxazoline	Etoxazole	53	0%	34	12%	2, 4
Plant Growth Regulator	GibberellicAcid	53	0%	34	0%	100, 200
Pyrazole	Fenpyroximate	53	0%	34	6%	2, 4
Pyridine	Triclopyr	53	0%	34	0%	100, 200
Pyrimidine	Fenarimol	53	8%	34	3%	50, 100
Pyrimidine	Pyrimethanil	53	0%	34	0%	20, 40

Quinonline	Quinclorac	53	0%	34	0%	100, 200
Tetrazine	Clofentezine	53	2%	34	3%	2, 4
Triazine	Metribuzin	53	2%	34	0%	50, 100
Triazolone	Carfentrazoneethyl	53	0%	34	0%	2, 4
Xylylalanine	Mefenoxam	53	4%	34	0%	5, 10

[a]The Limit of Detection (LOD) varied by batch. For chemicals run in multiple batches, multiple LODs are reported.