Supplemental Material

An algorithm for quantitatively estimating non-occupational pesticide exposure intensity for spouses in the Agricultural Health Study

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Table of Contents Page

Table S1. Source of inputs for determining ever treated ("Treated") and the probability of a treatment containing an active ingredient by treatment type in the residential pesticide use pathway equation at enrollment [Eq. 4].

Treatment type (*trt*)[a]	**AHS questions and responses for Treated$_{trt}$, variable**	**AHS questions and assumptions used to identify which scenarios in the Pesticide Exposure Matrix used to calculate the probability of treatment containing an active ingredient[b,c]**
Termites	**AHS Qx:** *How many times has this house been treated for termites?* **Response:** If ≥ 1 time, then Treated$_{termites}$ =1; if "never", then Treated$_{termites}$=0	**Assumed:** termites, professional
Non-termite Insects	**AHS Qx:** *How often is this house usually treated for flies, fleas, cockroaches, ants, or insects other than termites?* **Response:** If frequency provided, then Treated$_{insects}$=1; if "House not usually treated" marked, then *Treated$_{insects}$*=0	**AHS Qx:** *Who usually treats your home for these pests?* **If response is household member only:** average of consumer crawling insects, consumer flying insects **If response is professional applicator only:** average of professional crawling insects, professional flying insects **If response is both household and professional, other, or don't know:** average of consumer crawling insects, consumer flying insects, professional crawling insects, professional flying insects
Fleas/Ticks in the Home	**AHS Qx:** *Are any of the following treatments ever used to control fleas or ticks: flea powders, flea collars, flea/tick shampoo or dips, home fumigants/ bombs?* **Response:** If home fumigants/ bombs marked, then *Treated$_{fleas\ home}$*=1; if home fumigants/bombs not marked, then *Treated$_{fleas\ home}$*=0	**Assumed:** average of consumer fleas/ticks in home, professional fleas/ticks in home
Fleas/Ticks on Pets	**AHS Qx:** *Are any of the following treatments ever used to control fleas or ticks: flea powders, flea collars, flea/tick shampoo or dips, home fumigants/ bombs?* **Response:** If any treatments other than home fumigants/bombs marked, then: *Treated $_{fleas\ pets}$*=1; if none marked, *Treated$_{fleas\ pets}$*=0	**Assumed:** consumer fleas/ticks on pets
Lawn Weeds	**AHS Qx:** *Who usually treats your lawn?* **Response:** If self, someone else, professional, or other selected, then *Treated$_{weeds}$*=1. If "lawn never regularly treated," then *Treated$_{weeds}$*=0. **Response:** If "once a year" or more often, *Treated$_{weeds}$*=1; if "never or rarely", then *Treated$_{weeds}$*=0	**AHS Qx:** *Who usually treats your lawn?* **If response is household member only:** consumer lawn weeds **If response is AHS Qx response is professional applicator only:** professional lawn weeds **If AHS Qx response is both household and professional, other, or don't know:** average of consumer lawn weeds, professional lawn weeds

[a] The five types of residential pesticide treatments queried in the Phase 1 AHS spouse questionnaires.
[b] Probabilities for specific active ingredients provided in Supplemental Table S1. If multiple scenarios are applicable, the average probability across the relevant scenarios is used.
[c] Relevant scenario, including applicator type (*i.e.*, "consumer" or "professional"), based on Pesticide Exposure Matrix (PEM) (Colt et al. 2007) and/or spouse response to questionnaire item about who usually performs a given treatment type (where available).

Table S2. Probabilities of active ingredient use for residential pest treatment scenarios at enrollment.[a]

Active Ingredient	Termites	Non-Termite Insects, Household Member	Non-Termite Insects, Professional	Non-Termite Insects, Both/Other/DK	Fleas/Ticks in the Home	Fleas/Ticks on Pets	Lawn Weeds, Household Member	Lawn Weeds, Professional	Lawn Weeds, Both/Other/DK
	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]	PH 1[b]
2,4-D	0	0	0	0	0	0	0.62	0.38	0.5
Abamectin	0	0	0	0	0	0	0	0	0
Acephate	0	0	0	0	0	0	0	0	0
Allethrin	0	0.08	0	0.04	0.03	0.03	0	0	0
Atrazine	0	0	0	0	0	0	0	0.02	0.01
Bendiocarb	0	0	0.03	0.02	0	0	0	0	0
Benefin	0	0	0	0	0	0	0.04	0.06	0.05
Bensulide	0	0	0	0	0	0	0.02	0.04	0.03
Bifenthrin	0	0	0	0	0	0	0	0	0
Boric acid	0	0.02	0	0.01	0	0	0	0	0
Carbaryl	0	0.02	0.01	0.01	0.02	0.26	0	0	0
Chlordane	0.48	0	0.01	0.01	0	0	0	0	0
Chlorpyrifos	0.24	0.06	0.14	0.10	0.06	0.01	0	0	0
Clopyralid	0	0	0	0	0	0	0	0	0
Cube resins	0	0	0	0	0	0.05	0	0	0
Cyfluthrin	0	0.00	0.02	0.01	0	0	0	0	0
Cypermethrin	0.04	0	0.03	0.01	0	0	0	0	0
DDVP	0	0	0	0	0	0	0	0	0
DSMA	0	0	0	0	0	0	0.03	0	0.01
Dacthal	0	0	0	0	0	0	0.07	0.11	0.09
Deltamethrin	0	0	0	0	0	0	0	0	0
Diazinon	0	0.09	0.09	0.09	0.11	0	0	0	0
Dicamba	0	0	0	0	0	0	0.34	0.24	0.29
Dichlobenil	0	0	0	0	0	0	0	0.01	0.01
Dichlorophene	0	0	0	0	0	0.02	0	0	0
Dichlorvos	0	0.12	0	0.06	0.03	0.03	0	0	0
Diflubenzuron	0	0	0	0	0	0	0	0	0
Dimethoate	0	0	0	0	0	0	0	0	0
EPTC	0	0	0	0	0	0	0	0.01	0.01
Esfenvalerate	0	0	0	0	0	0	0	0	0
Eugenol	0	0	0	0	0	0	0	0	0
Fenoprop	0	0	0	0	0	0	0.05	0	0.03
Fenoxaprop	0	0	0	0	0	0	0	0	0
Fenoxycarb	0	0	0	0	0	0	0	0	0

Fenvalerate	0.01	0.01	0	0.01	0.01	0	0	0	0
Fipronil	0	0	0	0	0	0	0	0	0
Glyphosate	0	0	0	0	0	0	0	0.08	0.04
Heptachlor	0.09	0	0	0	0	0	0	0	0
Hexaflumuron	0	0	0	0	0	0	0	0	0
Hydra-methylnon	0	0.02	0	0.01	0	0	0	0	0
Hydroprene	0	0	0	0	0	0	0	0	0
Imidacloprid	0	0	0	0	0	0	0	0	0
Isophenfos	0.04	0	0	0	0	0	0	0	0
Lambda-Cyhalothrin	0	0	0	0	0	0	0	0	0
Linalool	0	0	0	0	0	0	0	0	0
Lindane	0	0	0	0	0	0.01	0	0	0
Lufenuron	0	0	0	0	0	0	0	0	0
MCPA	0	0	0	0	0	0	0	0.01	0.01
MCPP	0	0	0	0	0	0	0.36	0.24	0.30
MSMA	0	0	0	0	0	0	0.11	0.01	0.06
Malathion	0	0.06	0.01	0.03	0.03	0.11	0	0	0
Methoprene	0	0	0	0	0	0.01	0	0	0
Meth-oxychlor	0	0.02	0	0.01	0	0.04	0	0	0
Methyl bromide	0.01	0	0	0	0	0	0	0	0
Milbemycin	0	0	0	0	0	0	0	0	0
Naled	0	0.01	0	0.00	0	0	0	0	0
Orthoboric acid	0	0	0	0	0	0	0	0	0
Oryzalin	0	0	0	0	0	0	0	0	0
Oxadiazon	0	0	0	0	0	0	0	0.01	0
Pendimethalin	0	0	0	0	0	0	0.05	0.03	0.04
Permethrin	0.03	0.03	0	0.01	0.01	0.05	0	0	0
Phenothrin	0	0.04	0	0.02	0.03	0.02	0	0	0
Prallethrin	0	0	0	0	0	0	0	0	0
Prodiamine	0	0	0	0	0	0	0	0	0
Propetamphos	0	0	0.01	0.00	0	0	0	0	0
Propoxur	0	0.20	0.01	0.11	0.05	0.03	0	0	0
Pyrethrins	0	0.20	0.01	0.10	0.23	0.31	0	0	0
Pyrethrum powder other than pyrethrins	0	0	0	0	0	0	0	0	0
Pyridine	0	0	0	0	0	0	0	0	0
Pyriproxifen	0	0	0	0	0	0	0	0	0
Pyriproxyfen	0	0	0	0	0	0	0	0	0
Resmethrin	0	0.09	0	0.04	0.02	0.03	0	0	0

Ronnel	0	0.01	0	0.01	0.01	0	0	0	0
Rotenone	0	0	0	0	0	0.05	0	0	0
Selamectin	0	0	0	0	0	0	0	0	0
Siduron	0	0	0	0	0	0	0.02	0.01	0.01
Sulfuramid	0	0	0	0	0	0	0	0	0
Sulfuryl fluoride	0.13	0	0.01	0.01	0	0	0	0	0
Tetra-chlorvinphos	0	0	0	0	0	0.05	0	0	0
Tetramethrin	0	0.04	0	0.02	0.03	0.01	0	0	0
Tralomethrin	0	0	0	0	0	0	0	0	0
Triclopyr	0	0	0	0	0	0	0	0.01	0.01
Trifluralin	0	0	0	0	0	0	0	0.00	0.00
2,4-D, 2,4-dichlorophenoxyacetic acid; EPTC, S-ethyl dipropyl(thiocarbamate); DSMA, N,N-dimethyl-N-phenylsulphamide; MCPA, 4-chloro-2-methylphenoxy acetic acid; MCPP, mecoprop; MSMA, monosodium methyl arsenate									
a Weights (kres) only applied if probability that a given pest treatment product contained the active ingredient was ≥0.01. If probability was ≥1%and <20%, the assigned weight is 1.3. If probability was >=20%, the assigned weight is 1.5. If the probability=0, then kres is assigned as 0.									
[b]Enrollment AHS questionnaire covers lifetime use up to enrollment date (1993-1997). Probabilities from the relevant scenarios in Supplemental Table S1 from the years 1976, 1980, and 1990 were averaged. If an active ingredient was not included in the matrix for a given scenario or year, the probability was assumed zero.									