The Connecticut Agricultural Experiment Station, New Haven

Quality and Quantity of Pesticides Sold in Connecticut 1986

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People worry about pesticides. They worry about excessive use, and they worry whether a pesticide will control the pest bothering them. The logical response to these worries is determining how much pesticide is used and whether the contents of a container meet the guarantee on the label. Thus the Connecticut General Assembly has enacted statutes that permit recording the quantity of potent pesticides sold and require the inspection of pesticides for sale. In this Bulletin we report the amount sold and the outcome of inspections.

QUANTITY OF RESTRICTED PESTICIDES SOLD

Section 22a-50 of the Connecticut General Statutes specifies that pesticides that may adversely affect the environment shall be classified for "restricted use" by the Commissioner of Environmental Protection. The statute states: "In the event that the commissioner determines that the pesticide, when applied in accordance with its directions for use, warnings and cautions and for the uses for which it is registered, or for one or more of such uses, or in accordance with a widespread and commonly recognized practice, may generally cause, without additional regulatory restrictions, unreasonable adverse effects on the environment, including injury to the applicator, he shall classify the pesticide, or the particular use or uses to which the determination applies, for restricted use...." Thus, examining the restricted pesticides is examining the potent ones.

Beginning in 1979, Stephen Hitchcock and Bradford Robinson of the Department of Environmental Protection recorded the sales of restricted pesticides sold in the state. The quantity of pesticides sold, of course, does not precisely reveal use. Use is the sales in the state, plus the pesticides bought outside the state and used here, and minus the pesticides bought here and used elsewhere. Although the sales are not precisely the use, the sales do show where large quantities are used and indicate the trend in the use of potent pesticides.

Reports of the quantity of restricted pesticides sold began in Bulletin 831 of the The Connecticut Agricultural Experiment Station and continued in Bulletin 836. From 1979 to 1984 the quantity fluctuated from 89 to 118 metric tons and then fell to 75 in 1985. A surprisingly large portion of this quantity was sold to manage pests in the soil. The title of Bulletin 831 posed the question, "Where is the next strategic place to reduce pesticide use?", and the answer is, "In the soil."

Table 1 of the present Bulletin continues the reports of the sales of restricted pesticides. The number of metric tons sold per year recorded in the first line of the Table shows sales in 1986 increased to 85 tons from their record low of 75 in 1985 but remained below the 89 to 111 tons of 1979-1984.

To find the cause of the change in sales, the 111 kinds of pesticides sold were classified into broad classes according to the pest they were intended to control: rodents; weeds, fungi, and insects controlled by spraying; soil pests, such as nematodes and insects controlled by injection or drenching of the soil; the gaseous fumigant methyl bromide; and a miscellany including bird repellants. More than 1% of the

total quantity was sold in each of the five classes tabulated in Table 1. The salient change from 1985 to 1986 was the increasing preponderance of sales of pesticides for managing soil pests.

Examining the tons rather than percentages reveals even more. From 1985 to 1986 the changes that exceeded a metric ton were: Insecticides down 5.2 tons, methyl bromide up 1.1 ton, and soil pesticides up 13.6 tons. Fully 9.6 of the 13.6 ton increase in soil pesticides was caused by the sales of chlordane, which increased from 9.3 to 18.9 tons. In 1986 sales of chlordane were 22% of the total of all restricted pesticides. The label on chlordane sold in 1986 limited its use to establishing a barrier against termite attack.

Toxicity as well as quantity of pesticides is, of course, important. In Bulletin 831 a measure called "Hazard" was calculated by dividing the quantity of a pesticide ingredient sold by the dose that is acutely toxic to 50% of a group of test animals. This dose is called LD50 and is expressed as mg dose per kg body weight of the test animals, which are usually rats. Published LD50 were available for 107 of the 111 active ingredients sold sometime during 1979-86; methyl bromide is the only ingredient sold in large quantity that has no published LD50.

Surprisingly, the Hazard, which decreased from 1984 to 1985, decreased even more from 1985 to 1986, reaching a level in 1986 only half that in 1979 (Table 1). Decreased sales of pesticides with relatively great acute toxicity, such as one for soil insects and nematodes infesting corn and another for weeds, decreased Hazard more than it was increased by increased sales of other pesticides with less acute toxicity.

The large conclusions are: Despite an increase of 9.6 tons from 1985 to 1986 in the sales of chlordane for the control of termites,

TABLE 1--The quantity of active ingredients in restricted pesticides sold in Connecticut and recorded by the Department of Environmental Protection. To show the trend in annual sales, the metric tons of all pesticides are shown. To show the use of pesticides, the percentages of the annual total sold for the control of four classes of pests are tabulated. The gaseous fumigant, methyl bromide, is tabulated separately. The quantities sold for controlling rodents and miscellaneous pesticides comprised less than 1%. The acute toxicity of the pesticides is shown as Hazard, the ratio of quantity to the LD50 referred to the Hazard in 1979.

Pest	1979	1980	1981	1982	1983	1984	1985	1986
				Metric tons sold				
All	103	107	118	98	89	103	75	85
Percentage of all sold for control of classes of pests								
Soil pests	60	50	42	57	58	56	53	63
Weeds	23	24	33	28	23	18	25	16
Insects	10	11	11	8	10	13	14	12
Fungi	2	9	5	2	1	1	1	1
Methyl bromide	5	6	9	5	8	12	6	7
				Hazard as percentage of Hazard in 1979				
All	100	127	132	107	88	90	62	50

the quantity of restricted pesticides sold in 1986 remained below the quantities of 1979-1985. Further, the Hazard or acute toxicity in 1986 was only half that of 1979. In 1986 the pesticides sold for management of soil pests comprised fully 63% of sales of all restricted pesticides, the management of soil pests remains the strategic place to decrease pesticide use, and Station research is concentrating upon soil pests.

QUALITY OF PESTICIDES SOLD

When the Connecticut Act regulating the distribution, sale, and transportation of pesticides became effective in 1964, it required that the Commissioner of Agriculture and Natural Resources and Director of this Station purchase and analyze samples of pesticides offered for sale in Connecticut and publish the results. Beginning with the report of inspections for 1964 in Bulletin 682 of this Station, the character and composition of pesticides has been reported annually. This annual inspection is now carried forward by the Department of Environmental Protection and the Station, and in this Bulletin we report the quality of pesticides, pool products, and pet preparations collected during 1986 by inspectors of the Department of Environmental Protection and analyzed by chemists of the Station.

Table 2 shows individual samples representing 450 guarantees for active ingredients from 63 manufacturers. Following the names of the manufacturers are the brands of the products and the active ingredients. The percent guarantee is then shown followed by the percent found. Values followed by a minus sign (-) were deficient in amount of active ingredient; values followed by a plus sign (+) were excessive.

Two criteria determine if samples are satisfactory. The first is that the sample cannot contain a deficiency or excess of active ingredient. Deficiencies and excesses are determined according to Laboratory Verification Guidelines established by the U.S. Environmental Protection Agency. Overall, 3.4% of the 263 samples were deficient in at least one active ingredient and 0.4% were excessive in at least one active ingredient. For 450 guarantees for active ingredient, only 2.0% were deficient and 0.2% were excesssive. The second criterion is that a sample is unsatisfactory if it contains an ingredient not listed on the label. No unlisted ingredients were found in any of the samples tested.

Table 3 summarizes the number of samples tested from each manufacturer, the number of guarantees for active ingredients, the number of deficiencies or excesses, and the average percentage of guarantee.

ACKNOWLEDGMENTS

Analyses were performed by Martha Fuzesi, Joseph Mongillo, Mary Alice DeFrancesco, and Dennis Migneault. Samples were collected by Marshall Beott and Douglas Griswold. Pesticide laws are administered by the Commissioner of Environmental Protection.

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
A.H. Robins/Consumer Prod. Div.		
Sergeants Rug Patrol Carpet Insecticide & Freshener		
Allethrin	0.1	0.18
Phenothrin	0.23	0.26
Piperonyl butoxide	1.67	1.75
Acme Burgess, Inc./Chem. Div.		
Burgess Insect Fog Fogging Insecticide with Pyrethroid		
Resmethrin	0.200	0.206
Agway, Inc.		
Agway Diazinon		
Diazinon	25.0	26.3
Agway Double Action Flea Foam		
n-Octyl bicycloheptene dicarboximide	0.34	0.32
Piperonyl butoxide, tech	0.70	0.72
Pyrethrins	0.15	0.16
Agway Double-Action Flea Spray		
n-Octyl bicycloheptene dicarboximide	0.70	0.70
Piperonyl butoxide, tech	0.42	0.40
Pyrethrins	0.21	0.22
Agway Flea & Tick Powder		
Carbaryl	5.0	5.10
Agway Home Pest Insect Control		
Dursban	0.500	0.460
Piperonyl butoxide, tech	0.260	0.240
Pyrethrins	0.052	0.046
Agway Lawn Insect Control with Dursban		
Dursban	22.4	23.0
Agway Lawn Weed Killer		
2,4-D, diethanolamine salt	18.2	18.90
Dicamba, diethanolamine salt	1.9	1.94
Agway Liquid Sevin 4 F		
Carbaryl	42.6	44.00
Agway Malathion Insect Spray		
Malathion	55.00	53.90
Agway Organic Garden Spray with Pyrethrin		
Piperonyl butoxide, tech	10.0	10.10
Pyrethrins	1.0	1.06
Agway Professional Home Pest Control		
n-Octyl bicycloheptene dicarboximide	0.37	0.36
Piperonyl butoxide, tech	0.22	0.26
Pyrethrins	0.1	0.12
Agway Professional Lawn Weed Control		
2,4-D (butoxyethyl ester)	16.7	16.67
2-(2,4-Dichlorophenoxy) prop acid butoxyethyl ester	16.4	16.76

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Agway Rat/Mouse Bait		
Rozol	0.005	0.0052
Agway Roll-on Flea & Tick Killer		
2,3:4,5-Bis(2-butylene) tetrahydro-2-furaldehyde	0.50	0.41
n-Octyl bicycloheptene dicarboximide	0.33	0.32
Piperonyl butoxide, tech	0.20	0.20
Pyrethrins	0.10	0.12
Agway Spot Weeder		
2,4-D, dimethylamine salt	0.592	0.608
Dicamba, dimethylamine salt	0.066	0.060
MCPP, dimethylamine salt	0.287	0.251
Agway Swat II		
Phenothrin	0.191	0.210
Tetramethrin	0.200	0.186
Agway Take-Out Systemic Weed & Grass Killer Ready-To-Use		
Glyphosate, isopropylamine salt	0.96	0.87
Agway Tomato & Vegetable Insect Spray		
Piperonyl butoxide, tech	0.20	0.203
Pyrethrins	0.02	0.021
Agway Tree & Shrub Spray		
Kelthane	0.9	1.20
Meta-Systox R	6.0	6.50
Methoxychlor, tech	5.0	5.40
Agway Wasp & Hornet Jet Spray		
Resmethrin	0.250	0.254
Ambion Corp.		
Ambicide 85		
n-Alkyl dimethylbenzylammonium chlorides	2.45	2.24
n-Alkyl dimethylethylbenzylammonium chlorides	2.45	2.23
Ambicide Phenolic Disinfectant Cleaner		
Potassium o-benzyl-p-chlorophenate	3.962	3.83
Potassium o-phenylphenate	3.914	3.80
Amrep.		
Defense Residual Insecticide		
Diazinon	0.500	0.503
Pyrethrins	0.052	0.056
Piperonyl butoxide, tech	0.261	0.234
Fog Kill Oil Base Insecticide		
Resmethrin	0.200	0.195
BFC Chemicals, Inc.		
Ficam Plus		
Bendiocard	29.45	29.76
Piperonyl butoxide, tech	7.66	7.29
Pyrethrins	3.06	3.41

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Bidall Corp.		
Bidall Rat Bait with Coated Warfarin		
Warfarin	0.025	0.026
Black Leaf Prod. Co.		
Black Leaf 5% Sevin Garden Dust		
Carbaryl	5.0	4.90
Black Leaf Fruit Tree Spray		
Captan	7.0	7.20
Malathion	5.0	4.90
Methoxychlor, tech	10.0	9.90
Black Leaf 1% Rotenone Garden Dust		
Rotenone	1	1.20
Black Leaf Liquid Copper Fungicide		
Copper	4.0	3.75
Black Leaf Rose & Flower Beauty Spray		
Captan	0.503	0.560
Karathane	0.1460	0.1700
Piperonyl butoxide, tech	0.2560	0.4190+
Pyrethrins	0.0255	0.0284
Rotenone	0.1280	0.1270
Black Leaf Tomato & Vegetable Garden Dust		
Carbaryl	5.0	4.90
Maneb	6.0	7.35
Black Leaf Tomato & Vegetable Liquid Spray		
Carbaryl	22.5	23.90
Black Leaf Yard & Potato Fogger Spray Bomb		
Resmethrin	0.250	0.233
Bonide Chem., Inc.		
Bonide Benomyl 50% WP		
Benomyl	50	51.0
Bonide Borer-Miner Killer		
Lindane	20.00	21.4
Bonide Brushkill		
Dicamba, dimethylamine salt	1.5	1.60
2,4-D, dimethylamine salt	13.0	13.90
Bonide Captan		
Captan	50	49.0
Bonide Fruit Tree Spray		
Captan	12.0	13.00
Carbaryl	0.3	0.38
Malathion	6.0	6.50
Methoxychlor, tech	12.0	12.20

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Bonide Garden Dust		
Copper	5.00	5.34
Rotenone	0.50	0.480
Sulphur	25.00	24.30
Piperonyl butoxide, tech	0.30	0.139-
Pyrethrins	0.03	0.023
Bonide Garden, Turf & Ornamental Herbicide 5G		
Dacthal	5	4.65
Bonide Grass-N-Weed Killer		
Ammonium sulfamate	38.9	37.20
Bonide Jet Bee Bomb		
Baygon	0.50	0.555
n-Octyl bicycloheptene dicarboximide	0.33	0.360
Piperonyl butoxide, tech	0.20	0.175
Pyrethrins	0.10	0.098
Bonide Kelthane EC		
Kelthane	18.5	19.00
Bonide Lawn & Garden Insect Control w/Diazinon		
Diazinon	12.5	12.90
Bonide Lawn & Turf Fungicide		
Dyrene	50	49.7
Bonide Liquid Copper Fungicide 4E		
Copper salts (as copper)	4.0	3.76
Bonide Liquid Rotenone/Pyrethrins Spray		
Pyrethrins	0.8	0.84
Rotenone	1.1	1.20
Bonide Malathion 50% E		
Malathion	50	49.1
Bonide Methoxychlor 25% E Insecticide		
Methoxychlor	25	23.2
Bonide Moletox II Poison Bait Mole & Gopher Killer		
Zinc Phosphide	2	2.26
Bonide Rose & Floral Spray Bomb		
Carbaryl	0.750	0.770
Folpet	0.500	0.550
Kelthane	0.075	0.100
Malathion	0.500	0.600
Bonide Systemic Granules 1%		
Di-Syston	1	0.97
Bonide Weed Seedling Killer		
Eptam	2.3	2.34
Boyle-Midway, Inc.		
Black Flag Fogger		
Phenothrin	0.382	0.430
Tetramethrin	0.200	0.251

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Black Flag Wasp-Bee-Hornet Killer		
Baygon	0.500	0.590
DDVP	0.186	0.188
Bug Busters, Inc.		
Pyrid Residual Insecticide Concentrate (dilute solution)		
Fenvalerate	0.112	0.119
Carter-Wallace, Inc./Lambert Kay Div.		
Lassie Household Flea & Tick Killer		
Dursban	0.50	0.503
Victory 5 Collar for Cats		
o-Isopropoxyphenyl methylcarbamate	9.4	9.20
Victory 5 Collar for Small & Medium Dogs		
o-Isopropoxyphenyl methylcarbamate	9.4	9.40
Chacon Chem. Corp.		
Chacon Flea & Tick Powder		
Cabaryl	5	5.10
Chevron Chem. Co.		
Ortho Ant, Roach and Spider Killer		
Baygon	1.0	0.97
Ortho Brush B Gon Brush Killer		
Triclopyr, triethylamine salt	8.0	7.80
Ortho Crab Grass and Dandelion Killer		
2,4-D (Octylammonium salt)	7.67	7.70
Arsenic	4.1	4.00
Ortho Diazinon Soil & Foliage Dust		
Diazinon	4	4.10
Ortho Hi-Power Indoor Insecticide Fogger		
MGK 264 insecticide synergist	1.67	1.70
Piperonyl butoxide, tech	1.00	1.10
Pyrethrins	0.50	0.55
Ortho Home & Garden Insect Killer		
Resmethrin	0.250	0.255
Ortho Home Pest Insect Control		
Dursban	0.50	0.55
Ortho Hornet & Wasp Killer		
2-(1-Methylethoxy)phenyl methyl carbamate	0.50	0.470
Ortho House Plant Insect Control		
Acephate	0.25	0.260
Resmethrin	0.10	0.120
Ortho Kleenup Grass & Weed Killer		
Acifluorfen	0.12	0.10
Glyphosate, isopropylamine salt	0.50	0.47

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Ortho Liquid Sevin		
Carbaryl	27	28.40
Ortho Malathion 50 Insect Spray		
Malathion	50	50.3
Ortho Multi-Purpose Fungicide Daconil		
Daconil	29.6	30.0
Ortho Orthenex Insect & Disease Control		
Acephate	4.00	4.10
Dicofol	3.00	3.50
Triforine	3.25	3.50
Ortho Ortho-klor Indoor & Outdoor Insect Killer		
Dursban	1	1.0
Ortho Outdoor Insect Fogger		
MGK repellent 874	0.950	0.830
Resmethrin	0.250	0.242
Ortho Pest-B-Gon Roach Bait		
Baygon	2	2.2
Ortho Pet Flea & Tick Spray Formula II		
Piperonyl butoxide, tech	1.0	1.04
Pyrethrins	0.1	0.125
Ortho Poison Ivy and Poison Oak Killer		
2,4-D, diethanolamine salt	0.70	0.73
MCPP, diethanolamine salt	0.75	0.75
Ortho Tomato & Vegetable Insect Killer		
Piperonyl butoxide, tech	0.20	0.23
Pyrethrins	0.02	0.023
Ortho Tomato Vegetable Dust		
Captan	4.70	4.80
Rotenone from cube	0.75	0.96
Methoxychlor, tech	5.00	5.10
Ortho Vegetable Guard Soil Insect Killer		
Diazinon	5	4.80
Ortho Weed-B-Gon Lawn Weed Killer		
2,4-D, dimethylamine salt	10.8	10.70
MCPP, dimethylamine salt	11.60	12.10
Connecticut Aerosols, Inc.		
707 Automatic Indoor Fogger Roach Bomb		
Fenvalerate	0.400	0.387
Tetramethrin	0.200	0.211
707 Automatic Indoor Fogger Roach Bomb		
Fenvalerate	0.400	0.440
Tetramethrin	0.200	0.242
707 Automatic Indoor Fogger Roach Bomb		
Fenvalerate	0.400	0.392
Tetramethrin	0.200	0.200

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
707 House & Garden and Flying Insect Killer		
Phenothrin	0.191	0.220
Tetramethrin	0.200	0.230
BARC Non-Body Lice Control Spray		
d-Phenothrin	0.382	0.387
BARC Non-Body Lice Control Spray		
d-Phenothrin	0.382	0.387
Jackpot Formula III 707 Flying Insect Killer		
d-Phenothrin	0.191	0.176
Tetramethrin	0.200	0.178
Johnston's Hadabug II		
d-Phenothrin	0.143	0.156
Tetramethrin	0.250	0.284
Johnston's No-Roach Indoor Fogger		
Phenothrin	0.382	0.367
Tetramethrin	0.200	0.209
Mr. Destroyer Roach & Ant Killer		
Chlorpyrifos	0.500	0.437
n-Octyl bicycloheptene dicarboximide	0.166	0.150
Piperonyl butoxide, tech	0.100	0.085
Pyrethrins	0.050	0.045
R & C Spray		
d-Phenothrin	0.382	0.395
Rite Aid Ant & Roach Killer IV		
Chlorpyrifos	0.500	0.480
d-trans Allethrin	0.050	0.052
n-Octyl bicycloheptene dicarboximide	0.400	0.390
Rite Aid Ant & Roach Killer IV		
Chlorpyrifos	0.500	0.497
d-trans Allethrin	0.050	0.053
n-Octyl bicycloheptene dicarboximide	0.400	0.427
Rite Aid Spray Disinfectant		
n-Alkyl dimethyl benzylammonium chlorides	0.035	0.030
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.035	0.030
o-Phenyl phenol	0.109	0.112
Spider-Not		
beta-Butoxy beta-thiocyano diethyl ether	1.750	1.798
Time-Mist Indoor Fogger		
n-Octyl bicycloheptene dicarboximide	1.67	1.65
Piperonyl butoxide, tech	1.0	0.90
Pyrethrins	0.500	0.525
Tub & Tile Cleaner		
n-Alkyl dimethyl benzyl ammonium chlorides	0.190	0.224
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.190	0.224
Wasp Not		
beta-Butoxy-beta-thiocyano diethyl ether	1.750	1.775

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Crystalab, Inc.		
Crystalab Humidifier Water Treatment II		
n-Alkyl dimethyl benzyl ammonium chloride	2.5	2.76
d-Con Co., Inc.		
d-Con Jet Stream Ant 7 Roach Killer Formula VII		
Baygon	0.500	0.515
DDVP	0.186	0.180
Dexol, Inc.		
Dexol Bordeaux Mixture		
Copper	12.75	12.49
Dexol Cygon Systemic Insecticide		
Dimethoate	23.4	23.2
Dexol Dexa-klor Dust		
Bendiocarb	1.0	0.97
Dexol Dexa-klor Pest Control Fleas & Ticks		
Chlorpyrifos	0.50	0.054-
Dexol Lawn Weed Killer		
Dicamba, dimethylamine salt	0.84	0.80
MCPP, dimethylamine salt	3.66	3.90
2,4,-D, dimethylamine salt	8.07	8.50
Dexol Maneb Garden Fungicide		
Maneb	80.0	78.20
Dexol Red Spider & Mite Spray		
Kelthane	0.046	0.044
Dexol Tomato & Vegetable Dust		
Carbaryl	5.0	5.10
Zineb	4.5	4.10
Dexol Whitefly & Mealybug Killer		
Phenothrin	0.0547	0.0516
Tetramethrin	0.0286	0.077-
Dexol Zineb Garden Fungicide		
Zineb (as zinc)	17.7	17.79
Dow Chemical Co.		
Dow Dursban 4E Insecticide		
Dursban	44.4	43.3
Dow Dursban LO Insecticide		
Dursban	41.5	41.4
Dragon Chem. Corp.		
Dragon Gopher and Mole Killer Pellets		
Zinc Phosphide	2	2.57
Dragon Rabbit and Dog Repellent		
Napthalene	15	14.4

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Enforcer Prod., Inc.		
Enforcer Flea & Tick Spray for Pets		
MKG 264 insecticide synergist	0.668	0.700
MGK repellent	1.000	1.040
Piperonyl butoxide tech	0.400	0.460
Pyrethrins	0.200	0.260
Enforcer Rat & Mouse Killer Pellets		
Brodifacoum	0.005	0.0045
Environmental Safe Products Corp.		
Count-Down Rodenticide Mini Pellets Mouse Station		
Brodifacoum	0.005	0.0045
Farmco Industries		
Farmco Wood Treatment Gel Penetrating Penta Coating		
Pentachlorophenol	8.6	8.27
Farnam Co. Inc./Farnam Pet Prod. Div.		
Farnam No-Chew for Dogs		
Thymol	1.300	1.35
Benzyl diethyl ammonium benzoate	0.065	0.066
Just One Bite Bait Pack (Pellets)		
Bromadiolone	0.005	0.0045
Frank J. Curran Co.		
Curran Home Guard Dog and Cat Repellent		
Napthalene	30.0	34.1
Thiram	2.0	0.49-
Ziram	0.5	0.32-
Free Flow Fertilizer		
Greensweep Spray on Liquid Weed & Feed		
2,4-D, dimethylamine salt	5.670	5.719
Dicamba, dimethylamine salt	0.619	0.557
MCPP, dimethylamine salt	2.736	2.944
Gabriel Chem. Ltd./BG Pratt Div.		
BG Pratt House Plant Spray Bomb for Insects		
Pyrethrins	0.056	0.059
Rotenone	0.008	0.010
Pratt 5% Lindane Borer Spray		
Lindane	5.0	5.10
Pratt Mite Spray		
Kelthane	18.5	18.20

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Pratt Tomato Vegetable Liquid Insect Spray		
Diazinon	20	20.50
Methoxychlor	10	10.50
H. Krevit & Co., Inc.		
Hypochlorite Solution		
Sodium hypochlorite	12.5	13.5
Hypochlorite Solution		
Sodium hypochlorite	12.5	13.1
Howard Johnson's Enterprise, Inc.		
Greenbrier Dandelion & Broadleaf Weed Control		
Dicamba, dimethylamine salt	0.96	1.05
2,4-D, dimethylamine salt	14.22	15.60
Hub States Corp.		
Di-Tox V/B6000 One Shot Fogger		
Baygon	1.00	1.03
Vapona	6.5	6.40
J & L Adikes, Inc.		
Gro-Well 2% Diazinon		
Diazinon	2.00	2.20
Gro-Well 25% Methoxychlor Spray		
Methoxychlor, tech	25.29	24.60
Gro-Well 5% Sevin Dust		
Carbaryl	5.00	5.00
Gro-Well Borer Killer		
Lindane	5.00	5.20
Gro-Well Crabgrass and Broadleaf Weed Killer		
2,4-D (Octylamine salt)	5.44	5.40
Arsenic	4.00	3.91
Gro-Well Dandelion and Broadleaf Weed Killer		
2,4-D, dimethylamine salt	8.07	7.97
Dicamba, dimethylamine salt	0.84	0.81
MCPP, dimethylamine salt	3.66	3.59
Gro-Well Dandelion and Broadleaf Weed Killer Spray		
2,4-D, diethanolamine salt	0.178	0.198
Dicamba, diethanolamine salt	0.016	0.017
MCPP, diethanolamine salt	0.177	0.165
Gro-Well Floral and Rose Dust		
Carbaryl	3.00	3.00
Folpet	5.20	4.90
Malathion	4.00	4.30
Gro-Well Home & Garden Insect Spray		
Resmethrin	0.250	0.220

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Gro-Well Hornet and Wasp Spray		
Baygon	0.50	0.51
MGK 264	0.33	0.36
Piperonyl butoxide, tech	0.20	0.25
Pyrethrins	0.10	0.11
Gro-Well L2 Sevin		
Carbaryl	21.5	21.40
Gro-Well Liquid Fruit Tree Spray		
Karathane	2.00	2.10
Kelthane	3.30	3.10
Malathion	10.00	10.50
Methoxychlor, tech	5.00	5.20
Gro-Well Liquid Kelthane A Miticide		
Kelthane	18.50	18.90
Gro-Well Multi-Purpose Squeeze Duster		
Captan	4.00	3.80
Carbaryl	5.00	5.60
Malathion	4.00	4.20
Sulfur	25.00	25.40
Gro-Well No-Gro Weed & Grass Killer		
2,4-D, isooctyl ester	1.05	1.07
Prometon	2.10	2.20
Gro-Well Organic Insecticide		
Piperonyl butoxide, tech	3.00	3.10
Pyrethrins	0.50	0.54
Rotenone	1.50	1.68
Gro-Well Sevin		
Carbaryl	50.00	52.00
Gro-Well Tomato and Vegetable Dust		
Carbaryl	5.00	4.80
Zineb	4.50	5.72
Growell Poison Ivy Killer Spray		
2,4-D, diethanolamine salt	0.178	0.172
Dicamba, diethanolamine salt	0.016	0.018
MCPP, diethanolamine salt	0.177	0.167
J. T. Eaton & Co., Inc.		
Eaton's All Weather Bait Blocks Rodenticide		
Diphacinone	0.052	0.0044
K-Mart Corp.		
Super K-Gro Diazinon Spray		
Diazinon	25	23.8
Super K-Gro Liquid Sevin		
Carbaryl	22.5	24.00

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Super K-Gro Malathion 50		
Malathion	50	48.9
Super K-Gro Sevin Garden Dust		
Carbaryl	5	5.4
Super K-Gro Systemic Rose and Flower Care		
o,o-Diethyl s-[2-(ethylthio)ethyl]phosphorodithioate	1	1.16
Super K-Gro Tomato Vegetable Dust		
Captan	5.00	5.10
Rotenone	0.75	0.84
Methoxychlor, tech	5.00	4.90
Kenco Chem. & Mfg. Corp.		
Hot Shot Wasp & Hornet Killer		
Resmethrin	0.250	0.230
Rid-a-Bug Indoor Flea Killer		
Dursban	0.500	0.525
MGK 264 synergist	0.084	0.100
Piperonyl butoxide, tech	0.050	0.062
Pyrethrins	0.025	0.030
Spectracide Diazinon Liquid		
Diazinon	25.0	25.10
Spectracide Lawn Weed Killer		
2,4-D, dimethylamine salt	5.87	11.65
Dicamba, dimethylamine salt	1.20	1.21
MCPP, dimethylamine salt	10.89	11.65
Spectracide Liquid Weed & Feed		
2,4-D, dimethylamine salt	5.670	5.320
Dicamba, dimethylamine salt	0.619	0.550
MCPP, dimethylamine salt	2.736	2.920
Spectracide Sevin Liquid		
Carbaryl	22.5	22.20
Lesco, Inc.		
Lesco 17-5-10 Turf Fertilizer with Team		
N-Butyl-N-ethyl-a,a,a,-trifluoro-2,6-dinitro-p-toluidine	0.67	0.77
Trifluralin	0.33	0.38
Lesco Three Way Selective Herbicide		
2,4-D, dimethhylamine salt	32.67	32.15
Dicamba, dimethylamine salt	2.82	2.83
MCPP, dimethylamine salt	16.36	16.38
Lipha Chain, Inc./Chempar Prod. Div.		
Maki Rat & Mouse Bait Packs (Pellets)		
Bromadiolone	0.005	0.044

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Lynwood Labs, Inc.		
Shoo-fly Ant & Roach Killer		
Diazinon	0.500	0.492
Piperonyl butoxide, tech	0.261	0.269
Pyrethrins	0.052	0.059
Shoo-fly Home & Garden Multi-purpose Insect Killer		
Resmethrin	0.106	0.112
Tetramethrin	0.250	0.242
Shoo-fly Hornet Jet-Bomb		
o-o-Diethyl o-(2-isopropyl-4-methyl-6-pyrimidine) phosphorothioate	0.500	0.488
Piperonyl butoxide, tech	0.262	0.263
Pyrethrins	0.025	0.026
Shoo-fly Indoor Fogger		
Phenothrin	0.382	0.375
Tetramethrin	0.200	0.237
Millane Nurseries		
Diazinon AG 4E (dilute solution)		
Diazinon	0.5	0.51
Miller Chem. & Fert. Corp.		
BG Pratt		
Bendiocarb	1	1.1
BG Pratt Bordo-Mix Bordeaux Mixture		
Copper	12.75	12.63
BG Pratt Cygon 2E Systemic Insecticide		
Dimethoate	23.4	22.7
BG Pratt Diazinon		
Diazinon	5	4.9
BG Pratt Malathion - 50 Spray		
Malathion	50	50.5
BG Pratt Methoxychlor 25 Insect Spray		
Methoxychlor	25.0	24.6
BG Pratt Amitrol T Liquid Herbicide		
Amitrole	21.6	22.2
BG Pratt Fruit Tree Spray		
Captan	6.0	6.1
Malathion	6.0	7.1
Methoxychlor, tech	10.0	10.7
Sulfur	25.0	25.4
BG Pratt House & Yard Insect Spray		
Pyrethrins	0.02	0.022
Resmethrin	0.08	0.090
BG Pratt Noculate Systemic Insecticide Granular		
Disyston	1.0	0.744-

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
BG Pratt Red Arrow Insect Spray		
Piperonyl butoxide, tech	3.0	2.90
Pyrethrins	0.5	0.62
Rotenone	1.5	1.65
BG Pratt Scalecide		
Petroleum oil	98.8	98.6
BG Pratt Whitefly Spray		
Resmethrin	0.25	0.225
Miller Lime Sulfur Solution		
Calcium polysulfides	29	31.3
Science 5% Diazinon Dust		
Diazinon	5.0	4.90
Science 5% Sevin Dust		
Carbaryl	5.0	4.90
Science Berry-set		
beta-Naphthoxyacetic acid	2.67	2.68
Science Diazinon Spray		
Diazinon	12.5	12.65
Science Garden Insect Spray		
Malathion	12.5	13.20
Methoxychlor	12.5	12.70
Science Garden Weeder		
Dacthal	5.0	5.2
Science 1% Rotenone		
Rotenone	1.0	0.99
Science Systemic Insecticide Granules		
Disyston	1	0.950
Science Wonder-Brel		
Potassium gibberellate	0.0857	0.0821
Science Zineb Garden Fungicide		
Zineb (as metallic zinc)	17.7	13.62-
Old Fox Lawn Care		
Rhone Poulenc Buctril Herbicide and Acme Brush Killer-di		
Buctril	0.845	0.584-
Dicamba, dimethylamine salt	0.020	0.021
HCPP, dimethylamine salt	0.119	0.115
2,4-D, dimethylamine salt	0.111	0.120
Parrott Agro Ind., Inc.		
Parrott D-Ban Roach & Ant Spray		
Dursban	0.500	0.530
Piperonyl butoxide, tech	0.260	0.289
Pyrethrins	0.02	0.027
Parrott Diazinon 25% Concentrate		
Diazinon	25.0	24.9

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Parrott Lucky Sevin		
Carbaryl	22.5	22.70
Parrott Malathion 50%		
Malathion	50	50.4
Parrott Multi Purpose Maltox Insecticide Fungicide		
Dichlone	1.80	1.75
Malathion	15	17.7
Methoxychlor, tech	20	20.9
Parrott Scatter Bait Kills Roaches		
Orthoboric acid	100	100
Parrott Weed Buster Total Weed & Grass Killer		
Prometon	1.6	1.70
Pest Control Products of Connecticut		
Keykill B.C. -101- Roach Powder		
Boric Acid	99.9	83.81-
Robinson Pest Control		
Dursban 2E (dilute solution)		
Dursban	-	0.24
Pyrid (dilute solution)		
Pyrid	0.044	0.036
Rockland Chem. Co., Inc.		
Rockland Benomyl Fungicide		
Benomyl	50	51.9
Rockland Captan Garden Fungicide		
Captan	47.3	48.00
Rockland Ferbam Fungicide		
Ferbam	76	73.0
Rockland Kelthane Miticide		
Kelthane	18.5	18.8
Rockland Liquid Fruit Tree Spray		
Captan	11.35	11.25
Carbaryl	3.00	3.40
Malathion	3.50	4.20
Methoxychlor, tech	12.00	11.80
Rockland Maneb Fungicide		
Maneb	80	86.9
Rockland Methoxychlor		
Methoxychlor	25.0	26.9
Rockland Weed & Grass Killer		
2,4-D, butoxy propyl ester	1.63	1.57
Prometon	3.50	3.60

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Roebic Laboratories, Inc.		
Roebic Root Killer Formula K-77		
Copper sulfate	99	100
Rose & Co., Inc.		
A-Chem Boric Acid		
Boric acid	99	99.49
S. C. Johnson & Son, Inc.		
Raid Fumigator Fumigating Fogger		
Permethrin	12.6	13.7
Raid House & Garden Bug Killer		
Piperonyl butoxide, tech	1.050	1.100
Pyrethrins	0.176	0.178
Tetramethrin	0.081	0.100
Raid Liquid Ant & Roach Killer		
Baygon	0.665	0.684
DDVP	0.186	0.200
Raid Yard Guard Outdoor Fogger Formula II		
Allethrin	0.190	0.165
Resmethrin	0.075	0.090
2-Hydroxy-n-octyl sulfide	0.950	1.00
Sanitary Products Corp.		
Hospital Sage		
n-Alkyl dimethyl benzyl ammonium chlorides	3.5	3.45
n-Alkyl dimethyl ethyl benzyl ammonium chlorides	3.5	3.45
Security Chem. Co.		
Security Diazinon Yard & Vegetable Garden Granules		
Diazinon	5.0	4.90
Security Home Fruit Spray Flowable		
Captan	10.0	10.8
Malathion	7.5	8.7
Security Sevin - Maneb Spray		
Carbaryl	11.10	11.25
Maneb	13.00	13.57
Security Weed Buster		
2,4-D, dimethylamine salt	12.11	11.72
Dicamba, dimethylamine salt	1.34	1.31
MCPP, dimethylamine salt	5.8	6.58
Stauffer Chemical Co.		
Eptam 7-E Selective Herbicide (dilute solution)		
Eptam	0.725	0.830

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Swift Agric. Chem. Corp.		
Vigoro Rotenone Insecticide		
Rotenone	1.00	1.02
Syntron Ind., Inc.		
Syntron Ind. Lemon Fresh		
Octyl decyl dimethyl ammonium chloride	0.54	0.54
Dioctyl dimethyl ammonium chloride	0.27	0.27
Didecyl dimethyl ammonium chloride	0.27	0.27
Alkyl dimethyl benzyl ammonium chloride	0.72	0.72
Syntron Ind. Sanitron		
Octyl decyl dimethyl ammonium chloride	2.250	2.230
Dioctyl dimethyl ammonium chloride	1.125	1.113
Didecyl dimethyl ammonium chloride	1.125	1.113
Alkyl dimethyl benzyl ammonium chloride	3.000	2.970
Technical Products Corp.		
300 Boric Acid Aerosol Crack & Crevice Residual		
Boric acid	20	20.5
The Hubbard Hall Chemical Co.		
Sodium Hypochlorite Solution		
Sodium hypochlorite	11.0	11.0
Tru Green		
Roundup-Oust mixture (dilute solution)		
Roundup	0.51	0.44
Uniroyal Chemical Co., Inc.		
Comite		
Propargite	73	76.2
Omite 6E		
Propargite	68.1	71.7
Omite Technical		
Propargite	85	87.8
Vitavax, tech		
Carboxin	97.0	96.50
Vahlar Chemical Corp.		
Grannicks Shampoo for Dogs		
Pyrethrins	0.05	0.045
Piperonyl butoxide, tech	0.50	0.46
Valagra, Inc.		
Cleary's Dursban 4E Insecticide		
Dursban	0.6	0.351-

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
W. R. Grace & Co./Horticultural Prod.		
Peters Prof Insecticide All Purp Houseplant/Garden Spray		
Piperonyl butoxide	0.20	0.23
Pyrethrins	0.02	0.021
Whitmire Research Labs, Inc.		
Whitmire PT 280 Orthene Acephate Insecticide		
Acephate	1.0	1.10
Whitmire PT 550 Resmethrin Insect Fogger		
Resmethrin	0.500	0.510
Whitmire PT 515 Wasp-Freeze Instant Wasp Killer		
Pyrethrins	0.05	0.06
Rotenone	0.12	0.16
Whitmire PT 515 Wasp-Freeze Instant Wasp Killer		
Pyrethrins I + II	0.05	0.05
Rotenone	0.12	0.13
Woolfolk Chem. Works, Inc.		
Security Amitrol		
Amitrole	1.0	0.97
Security Ant Killer		
Dursban	0.5	0.50
Security Baracide Total Vegetation Killer		
Bromacil, lithium salt	1.7	1.64
Security Blot-Out 2		
Glyphosate, isopropylamine salt	0.96	0.88
Security Bug Off Dust		
Carbaryl	5.00	4.96
Security Crabgrass Killer		
Monosodium methonearsonate (as arsenic)	5.11	5.14
Security De-Flea Flea & Tick Spray Ready-to-use		
Piperonyl butoxide, tech	0.60	0.69
Pyrethrins	0.06	0.056
Security Fungi-Gard		
Chlorothalonil	11.24	11.32
Security Malathion Multi-purpose Spray		
Malathion	56.1	54.5
Security Nutonex Sulphur Wettable		
Sulphur	94.0	92.80
Security Rose & Flower Dust		
Carbaryl	5.00	5.60
Chlorothalonil	5.00	5.50
Kelthane	1.00	0.98
Sulphur	20.00	21.00

TABLE 2--Continued

Manufacturer, Product Name & Active Ingredient	Percent Guarantee	Percent Found
Security Sevin Spray		
Carbaryl	23.0	22.3
Security Tomato & Vegetable Spray Ready-to-use		
Piperonyl butoxide, tech	0.20	0.184
Pyrethrins	0.02	0.019
York Chemical Co., Inc.		
York Food Processors Spray/Fog AO 264		
n-Octyl bicycloheptene dicarboximide	1.67	1.60
Piperonyl butoxide, tech	1.00	1.00
Pyrethrins	0.50	0.66
Zoecon Corp./Prof. Pest Mgmt. Div.		
Zoecon Precor Plus Fogger		
Methoprene	0.15	0.17
Permethrin	0.50	0.54

TABLE 3--SUMMARY FOR EACH MANUFACTURER OF NUMBER OF PRODUCTS TESTED, NUMBER OF GUARANTEES FOR ACTIVE INGREDIENTS, NUMBER OF GUARANTEES DEFICIENT OR EXCESSIVE, AND AVERAGE PERCENTAGE OF GUARANTEE

Manufacturer	Number of products tested	Number of guarantees	Number of guarantees deficient(-)/ excessive(+)	Average % of guarantee
A.H. Robins	1	3	0	110
Acme Burgess	1	1	0	103
Agway	20	40	0	102
Ambion	2	4	0	94
Amrep.	2	4	0	99
BFC	1	3	0	103
Bidall	1	1	0	104
Black Leaf	8	15	1+	109
Bonide	20	35	1-	102
Boyle-Midway	2	4	0	114
Bug Busters	1	1	0	106
Carter-Wallace	3	3	0	100
Chacon	1	1	0	102
Chevron	23	37	0	98
Connecticut Aerosols	18	37	0	101
Crystalab	1	1	0	110
d-Con	1	2	0	100
Dexol	10	14	2-	94
Dow	2	2	0	98
Dragon	2	2	0	112
Enforcer	2	5	0	109
Environmental Safe	1	1	0	90
Farmco	1	1	0	95
Farnam	2	3	0	98
Frank J. Curran	1	3	2-	67
Free Flow	1	3	0	100
Gabriel	4	6	0	106
H. Krevit	2	2	0	106
Howard Johnson's	1	2	0	110
Hub States	1	2	0	101
J & L Adikes	19	41	0	111
J.T. Eaton	1	1	0	85
K-Mart	6	8	0	105
Kenco	6	13	0	105
Lesco	2	5	0	106

TABLE 3--Continued

Manufacturer	Number of products tested	Number of guarantees	Number of guarantees deficient(-)/ excessive(+)	Average % of guarantee
Lipha Chain	1	1	0	88
Lynwood Labs	4	10	0	104
Millane Nurseries	1	1	0	102
Miller	24	31	2-	101
Old Fox Lawn Care	1	4	1-	95
Parrott Agro	7	11	0	107
Pest Control Prod. of CT	1	1	1-	84
Robinson	2	1	0	82
Rockland	8	12	0	104
Roebic	1	1	0	101
Rose	1	1	0	101
S.C. Johnson & Son	4	9	0	107
Sanitary	1	2	0	99
Security	4	8	0	104
Stauffer	1	1	0	115
Swift	1	1	0	102
Syntron	2	8	0	100
Technical	1	1	0	103
The Hubbard Hall	1	1	0	100
Tru Green	1	1	0	86
Uniroyal	4	4	0	103
Vahlar	1	2	0	91
Valagra	1	1	1-	59
W.R. Grace	1	2	0	110
Whitmire	4	6	0	112
Woolfolk	13	18	0	100
York	1	3	0	109
Zoecon	1	2	0	111
Total	263	450		

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