

*The
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New Haven*

Quality and Quantity
of Pesticides Sold
in Connecticut 1987

BY LESTER HANKIN
AND PAUL E. WAGGONER

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People worry about pesticides. They worry that the pesticide won't control the silverfish scurrying around the bathroom when the lights go on, the caterpillar eating their garden when they spare the spray, or the tick sucking children's blood as they walk in the woods. But they also worry that too much pesticide is used or that the liquid in the bottle may be different than described on the label. To allay these worries, the General Assembly authorized analyses and public reports on the quantity and quality of pesticides sold in Connecticut.

The Connecticut Agricultural Experiment Station has a special role in pest control. Revising the charter of the Station in 1983, the General Assembly reaffirmed the franchise of the Station to experiment with plants and their pests, insects, soil and water and to analyze products for sale. Earlier the General Assembly by a statute directed the Station to appoint the State Entomologist and made that person responsible for official control of pests, including the gypsy moth, pests that should be quarantined and pests in nurseries. General Statute 22a-54 causes the Station to inspect before aerial spraying.

Then increasing the surveillance of pesticides, the General Assembly enacted General Statute 22a-59, authorizing the Department of Environmental Protection (DEP) to sample the pesticides for sale and the Station to analyze them.

QUANTITY AND HAZARD 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 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.

Since 1979, Stephen Hitchcock and Bradford Robinson of the Department of Environmental Protection have faithfully recorded sales of restricted pesticides in the State, and they have generously supplied the data to us. The quantity of pesticides sold 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 sales are not precisely the use, the sales do show where large quantities are used and indicate the trend in use of potent pesticides.

QUANTITY

The reports of the quantities of restricted pesticides from 1979 through 1987 now make a 9-year series, sufficient to see a trend, Fig. 1. With a couple of upward fluctuations in 1981 and 1985 the sales have tended downward. Since the metric tons, i.e. 2204 lb, sold are plotted on Fig. 1 as logarithms, the straight

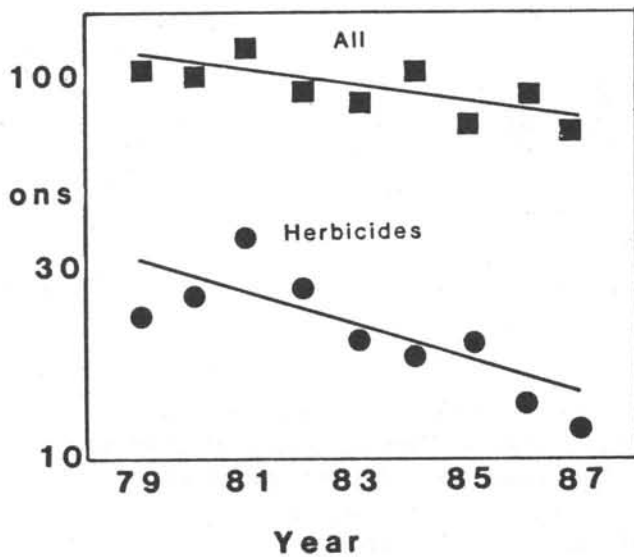


Figure 1—Metric tons of all restricted pesticides (squares) and of herbicides (circles) sold in Connecticut 1979-87. The vertical axis is logarithmic and the fitted lines represent decreases of 4.8%/annum of the total and 10%/annum of the herbicides.

line fitted to them shows a steady percentage decrease: 5% per annum. Precisely, the estimated decrease is 4.82% per annum with a standard error of 1.30%.

The tabulation of sales begun in Bulletin 831 is extended through 1987 in Table 1 of the present bulletin, showing that the sales declined from just over 100 tons in the early 1980's to 73 tons in 1987.

To locate the cause of the decrease, the 114 kinds of pesticides sold were classified into broad classes according to the pest they were intended to control: 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 and creosote. The classes comprising more than 1% of the total are shown in Table 1; the miscellany and rat killers never comprised 1%, and the chemicals to control soil pests always comprised more than 50%.

The salient trend among the classes is the

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 LISTED. TO SHOW THE USE OF PESTICIDES, THE PERCENTAGES OF THE ANNUAL 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%.

Pest	Year									
	1979	1980	1981	1982	1983	1984	1985	1986	1987	
	Metric tons sold									
All	103	107	118	98	89	103	75	85	73	
	Percentage of all sold for control of classes of pests									
Soil pests	60	50	42	57	58	56	53	63	58	
Weeds	23	24	33	28	23	18	25	16	17	
Insects	10	11	11	8	10	13	14	12	15	
Fungi	2	9	5	2	1	1	1	1	2	
Methyl bromide	5	6	9	5	8	12	6	7	7	

changing sales of herbicides, which the fitted line of Fig. 1 shows declined 10.0%/annum with a standard error of 2.7%. The decline of 3.2% in the major use, control of soil pests, and in the lesser classes of insecticides and fungicides changed their proportions little as the total declined.

Changes in sales of individual ingredients can be grasped by examining 21 pesticides whose 1987 sales exceeded their average of 1979-86 more than 0.1 ton. Noteworthy were the herbicide bladex, which exceeded its average more than a ton, and the soil insecticide chlorpyrifos, which exceeded its average nearly 5 tons. Creosote was not on the inventory of sales of restricted pesticides before 1987, when about 0.8 tons were reported.

Sales of 23 ingredients were below their 1979-86 average more than 0.1 ton. Important decreases were: vorlex, 11 tons; alachlor, about 8 tons; chlordane, dinoseb, carbofuran, temik, methyl bromide, and chlorothalonil, each about 2 tons. Sales of chlordane, which accounted for much of the increase from 1985 to 1986, fell in 1987, reaching a level about 3 tons below its 1979-86 average.

The trend in sales of four pesticides exemplify the changes:

—Glyphosate is a non-selective herbicide with the high LD50 of 4300 mg/kg, indicating little toxicity. LD50 is the amount of toxicant necessary to kill 50% of the test animals, usually rats. It is expressed as mg/kg, the weight of toxicant per body weight. The increase in sales of glyphosate was rather steady and approximately +0.3 ton/annum during 1979-87 (Fig. 2).

—Vorlex is a soil fumigant that controls weeds, fungi, insects and nematodes and has an LD50 of 538 mg/kg. When one of its components, 1,3-dichloropropane, was discovered to be harmful, 1,3-dichloropropene was substituted. 1,3-Dichloropropane, one of the components of Vorlex, was discovered in groundwater (Frink and Hankin 1986). Sales of Vorlex have fallen, averaging a decrease of -2.0 tons/annum

(Fig. 3). The decline of Vorlex exemplifies declines of others: the systemic insecticide, acaricide and nematocide for soil use, temik, declined -0.5 ton/annum; and the herbicide alachlor, declined -1.8 ton/annum.

—Chlordane is a soil insecticide with an LD50 of about 400 mg/kg. Formerly it was applied to control such pests as black vine weevil on Taxus, but recently its use has been restricted to controlling termites in houses. Its sales have declined with the notable exception of 1986, when a boom in the sale of existing houses evidently caused a corresponding boom in chlordane use, which has now declined (Fig. 4). After April 15, 1988 chlordane can no longer be legally sold or used.

—Methyl parathion is an insecticide with the low LD50 of about 10 mg/kg. When it is encapsulated, however, its toxicity to an applicator is decreased. The micro-capsules are used in orchards and corn fields. When it was found killing bees (Anderson and others 1984 and 1986), its use was regulated and sales fell (Fig. 5).

TOXICITY

The example of methyl parathion illustrates that toxicity as well as quantity must be examined. It would be wrong-headed to decrease quantity by replacing less toxic chemicals with chemicals more toxic to mammals. On the other hand, it would be advantageous to decrease toxicity, even if tonnage were increased.

Accordingly, in Bulletin 831 a measure called "Hazard" was calculated by dividing the quantity of a pesticide ingredient sold by the LD50 or dose that is acutely toxic to 50% of a group of test animals. Published LD50 were available for 108 of the 114 active ingredients; creosote and the gaseous fumigant methyl bromide are the only ingredients with no published LD50 and sold in quantity greater than 0.1 ton during any year 1979-87.

The course of Hazard during the 9 years is shown in Fig. 6 as a percentage of the Hazard for all restricted pesticides sold in

Note for Figures 2-5: Metric tons of four exemplary restricted pesticides sold in Connecticut 1979-87.

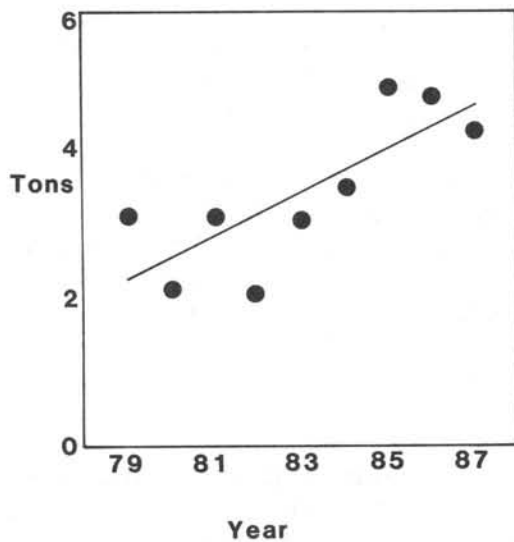


Figure 2—Tons of glyphosate, a non-selective herbicide, with a line showing an increase of +0.3 ton/annum.

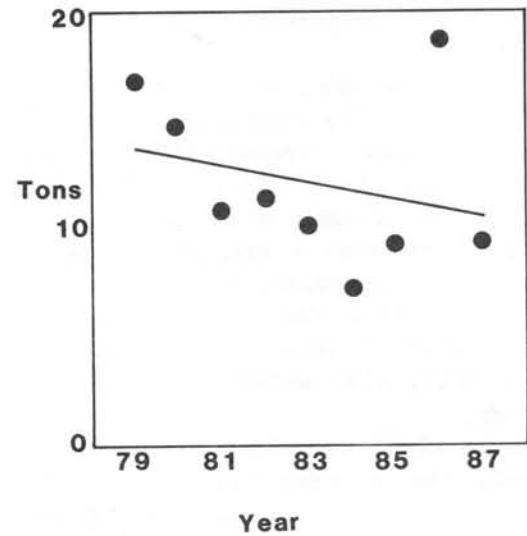


Figure 4—Tons of chlordane, a soil insecticide that was restricted to termite control, with a line showing a decrease of -0.4 ton/annum. After April 15, 1988 chlordane can no longer be legally sold or used.

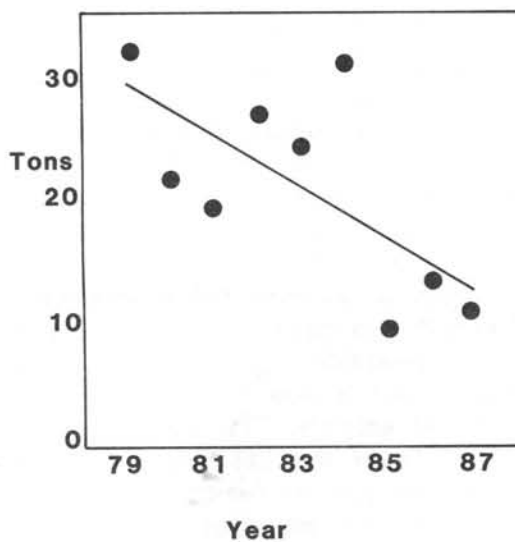


Figure 3—Tons of vorlex, a soil fumigant that controls weeds, fungi, insects and nematodes, with a line showing a decrease of -2.0 tons/annum.

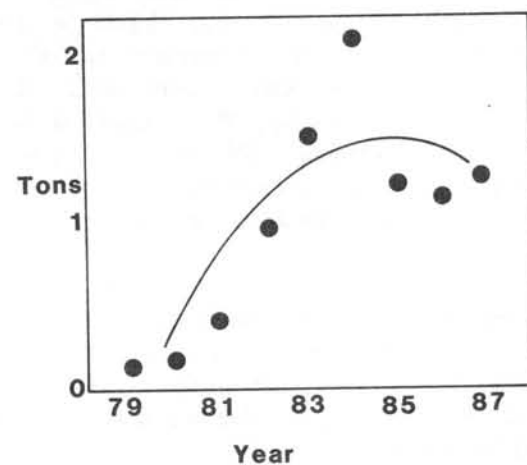


Figure 5—Tons of methyl parathion, an insecticide, with a curve showing an increase of 0.6 ton/annum in 1987.

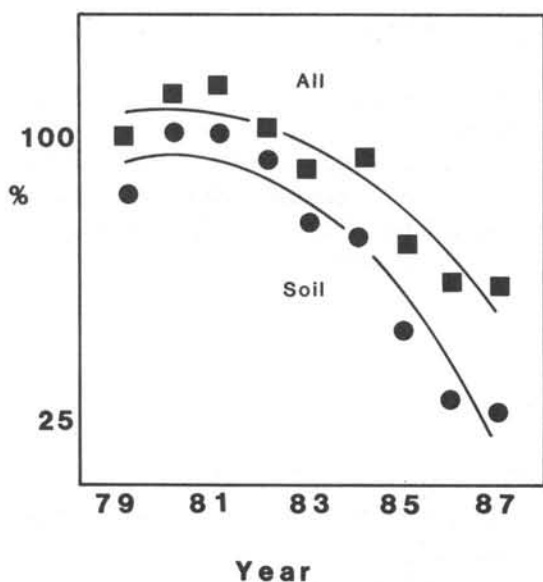


Figure 6—Hazard of the restricted pesticides sold in Connecticut 1979-87. Hazard is the weight of an ingredient divided by its acute toxicity LD50, and it is plotted as the logarithm of Hazard in each year as a percentage of the Hazard of all restricted pesticides sold in 1979. The squares denote all and the circles denote soil pesticides. The fitted curves show relative changes in %/annum of the percentage of 1979: All pesticides, an increase of 4%/annum in 1979 and a decrease of 29%/annum in 1987; Soil pesticides, an increase of 8%/annum in 1979 and a decrease of 42%/annum in 1987.

1979. The soil pesticides contribute about three-fourths the total Hazard of all pesticides. The curve fitted to the course of change in total restricted pesticides corresponds to an increase of +4% in 1979 and a decrease of -29% in 1987. Similarly, the curve fitted to the course of soil pesticides corresponds to an increase of +8% in 1979 and a decrease of 42% in 1987. One should not, of course, extrapolate the precipitous decrease in Hazard, expecting it to continue to no Hazard at all. Clearly the decrease in tonnage is not being achieved by substituting more toxic for less toxic.

Comparing the sales of restricted pesticides in Connecticut to the U.S. production of all pesticides, one finds the Connecticut quantity is only 100 of the national 574,000 tons. Nationally, production of all pesticides fell about a sixth between 1979 and 1984 (USDA Agricultural Statistics 1986 or USDC Statistical Abstract 1987).

The 73 tons of restricted pesticides sold in Connecticut comprise only 8% of the estimated 907 tons of all kinds used in the state (Frink 1987).

Is the decrease in pesticide sales depicted in Fig. 1 from a high, low or medium level of use? Frink (1987) estimated pesticide use in Connecticut agriculture from the 1987 US Census and from a publication of the Conservation Foundation (1987). These estimates of actual use are about a quarter of that calculated from recommendations by the Cooperative Extension Service in Connecticut and elsewhere in the region for applications of specific pesticides to the major crops in Connecticut. Thus pesticide use in agriculture in Connecticut is conservative, and the decreases depicted in Fig. 1 are from an already low level.

Bulletin 831 (Waggoner 1986) reported that the next strategic place to decrease pesticide use is in the soil, where more than half the weight and about three-fourths the Hazard is applied. The decline in soil pesticides shows how conservative use of soil pesticides does control Hazard (Fig. 6) and quantity (Fig. 1) of total pesticide sales.

Thus the use of pesticides in Connecticut is low and decreasing, and scientists of The Connecticut Agricultural Experiment Station at New Haven and Windsor are pursuing pest controls, especially biological, and pest controls in the soil, for still further decreases in pesticide use while controlling 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 the 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 1987 by inspectors of the Department of Environmental Protection and analyzed by chemists of the Station.

Table 2 shows individual samples representing 477 guarantees for active ingredients from 39 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, 3.5% of the 257 samples were deficient in at least one active ingredient and 0.4% were excessive in at least one active ingredient. For 477 guarantees for active ingredient, only 2.9% were deficient and 0.2% were excessive. The second criterion is that a sample is unsatisfactory if it contains an ingredient not listed on the label. One sample contained an unlisted ingredient.

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

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TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Aeraxon Prod., Inc.		
Revenge Home Exterminating Kit		
Piperonyl butoxide, tech.	3.0	2.94
Pyrethrins	0.3	0.35
Agway, Inc./Chem. Div.		
Agway Ant and Soil Insect Granules		
Diazinon	5	5.04
Agway Diazinon Insect Spray		
Diazinon	25.0	24.20
Agway Flea and Tick Insect Spray		
Chlorpyrifos	0.500	0.520
Piperonyl butoxide, tech.	0.260	0.290
Pyrethrins	0.052	0.050
Agway Fruit Tree Spray		
Captan	11.35	11.00
Carbaryl	3.00	3.20
Malathion	3.50	4.30
Methoxychlor, tech.	12.00	11.50
Agway Garden Weed Killer		
Dimethyl tetrachloroterephthalate	5	5.4
Agway Home Pest Insect Control		
Chlorpyrifos	0.500	0.510
Piperonyl butoxide, tech.	0.260	0.280
Pyrethrins	0.052	0.058
Agway Lawn Insect Control with Dursban		
Chlorpyrifos	22.4	22.80
Agway Liquid Sevin 4F		
Carbaryl	42.6	44.2
Agway Malathion Insect Spray		
Malathion	55.00	54.70
Agway Poison Ivy - Poison Oak Killer		
Glyphosate, isopropylamine salt	0.96	1.04
Agway Rose and Floral Insect Spray		
Piperonyl butoxide, tech.	0.20	0.23
Pyrethrins	0.02	0.019
Agway Rotenone Dust		
Rotenone	1.00	1.10
Agway Spot Weeder		
2,4-D, dimethylamine salt	0.593	0.608
Dicamba, dimethylamine salt	0.066	0.067
MCPP, dimethylamine salt	0.287	0.305
Agway Swat II		
Phenothrin	0.191	0.198
Tetramethrin	0.200	0.205
Agway Total Weed Killer		
Prometon	1.6	1.53
Agway Tree and Shrub Spray		
Kelthane	0.9	0.96
Meta Systox	6.0	6.30
Methoxychlor, tech.	5.0	5.10

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Agway Wasp and Hornet Jet Spray		
Resmethrin	0.250	0.247
Agway Weed and Brush Killer		
Ammonium sulfamate	46.5	45.0
Agway Yard and Kennel Spray		
Malathion	55.00	54.40
Aireactor Corp.		
Aireactor DDG Deodorizer, Detergent & Germicide		
n-Alkyl dimethyl benzyl ammonium chlorides	2.50	1.71-
n-Alkyl dimethyl ethyl benzyl ammonium chlorides	2.50	1.70-
Alljack and Co.		
Super K-Gro Diazinon Granules		
Diazinon	2.0	1.95
Super K-Gro Rose & Floral Dust		
Folpet	5.0	5.10
Malathion	4.0	4.40
Sevin	3.0	3.1
Super K-Gro Tomato Vegetable Dust		
Captan	5.00	4.90
Methoxychlor, tech.	5.00	4.80
Rotenone	0.75	0.90
Amchem Prod., Inc./Subsid. of Union Carbide Corp.		
Weedone Crab Grass Killer		
Calcium acid methanearsonate	5	5.05
American Cyanamid Co.		
Combat Ant Control System		
Hydramethylnon	0.900	0.960
Bonide Chem. Co., Inc.		
Bonide Benomyl 50% WP		
Benomyl	50	49.7
Bonide Borer-Miner Killer		
Lindane	20.00	21.50
Bonide Bulb Dust		
Methoxychlor, tech.	5.0	4.90
Thiram	10.0	10.00
Bonide Garden Dust for Vegetables-Flowers		
Copper	5.00	5.32
Piperonyl butoxide, tech.	0.30	0.325
Pyrethrins	0.03	0.025
Rotenone	0.50	0.65
Sulphur	25.00	24.98
Bonide Garden, Turf & Ornamental Herbicide 5G		
Dacthal	5	4.9

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Bonide Jet Bee Bomb		
Baygon	0.50	0.54
n-Octyl bicycloheptene dicarboximide	0.33	0.33
Piperonyl butoxide, tech.	0.20	0.20
Pyrethrins	0.10	0.12
Bonide Kelthane EC		
Kelthane	18.5	18.30
Bonide Lawn & Turf Fungicide		
Dyrene	50	55.0
Bonide Liquid Rotenone/Pyrethrins Spray		
Pyrethrins	0.8	0.88
Rotenone	1.17	1.23
Bonide Malathion 50% E		
Malathion	50	50.4
Bonide Maneb Flowable with Zinc		
Maneb	37	38.4
Bonide Moletox II Poison Bait		
Zinc phosphide	2	2.09
Bonide Organic Greenhouse, Houseplant & Vegetable Spray		
Piperonyl butoxide, tech.	10.0	10.20
Pyrethrins	1.0	0.95
Bonide Rose & Floral Spray Bomb		
Phenothrin	0.191	0.198
Tetramethrin	0.200	0.191
Bonide Systemic Granules 1%		
Disyston	1	0.98
Bonide Systemic Insecticide		
Dimethoate	23.4	24.40
Holdridge A Complete Fruit Tree Spray (Powder)		
Captan	15.0	14.30
Malathion	15.0	15.3
Methoxychlor	7.5	8.00
Holdridge Captan - 50% WP		
Captan	50	48.6
Holdridge Flower - Vegetable 4 in 1 Spray		
Karathane	1.4	1.20
Malathion	9.4	10.20
Methoxychlor, tech.	9.5	10.70
Holdridge Fruit Tree Spray (Liquid)		
Captan	12.0	12.8
Carbaryl	0.3	0.40
Malathion	6.0	6.4
Methoxychlor	12.0	13.0
Holdridge Methoxychlor 25% E Insecticide		
Methoxychlor	25	26.2
Holdridge Rotenone 5 Organic Insecticide		
Rotenone	5.0	4.9

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Holdridge Tre-Tox Complete Fruit Tree Dust or Spray		
Captan	6.0	4.83-
Carbaryl	0.5	0.49
Malathion	3.0	2.96
Methoxychlor	6.0	6.5
Boyle-Midway, Inc.		
Black Flag Ant Traps		
Chlorpyrifos	0.500	0.510
Black Flag Flea & Tick Killer Rug & Room Spray		
Phenothrin	0.287	0.074-
Tetramethrin	0.400	0.085-
Black Flag Wasp, Bee and Hornet Killer Formula A		
Baygon	0.50	0.53
DDVP	0.186	0.166
C & J Chem. Co./Enforcer Prod. Div.		
Enforcer Ant & Roach Killer		
Baygon	0.500	0.440
MGK-264	0.166	0.176
Piperonyl butoxide, tech.	0.100	0.110
Pyrethrins	0.050	0.057
Enforcer Flea & Roach Fogger		
Allethrin	0.300	0.297
Phenothrin	0.191	0.200
Enforcer Flea & Tick Powder		
MGK-264	0.48	0.42
Piperonyl butoxide, tech.	0.20	0.18
Pyrethrins	0.10	0.12
Enforcer Flea & Tick Shampoo for Pets		
MGK-264	0.33	0.35
Piperonyl butoxide, tech.	0.20	0.28
Pyrethrins	0.10	0.11
Enforcer Flea & Tick Spray for Pets		
MGK repellent	0.668	0.680
Piperonyl butoxide, tech.	0.400	0.400
Pyrethrins	0.200	0.220
2,3:4,5-bis(2-butylene) tetra-hydro-2-furaldehyde	1.000	1.000
Enforcer Flea Killer for Carpets		
MGK-264	0.668	0.725
Piperonyl butoxide, tech.	0.400	0.420
Pyrethrins	0.200	0.200
Enforcer Flea Spray for Carpets & Furniture		
Dursban	0.50	0.51
MGK-264	0.30	0.31
Piperonyl butoxide, tech.	0.20	0.22
Pyrethrins	0.10	0.10
Enforcer Flea, Ant & Roach Killer II		
Diazinon	0.500	0.430
Piperonyl butoxide, tech.	0.260	0.280
Pyrethrins	0.052	0.060

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Enforcer Fly Kill		
MGK-264	1.00	0.58-
Piperonyl butoxide, tech.	0.60	0.59
Pyrethrins	0.30	0.28
Enforcer Mouse Kill		
Brodifacoum	0.005	0.0049
Enforcer Rat Bait Kills Rats & Mice		
2-Pivalyl-1, 3-indandione	0.025	0.022
Enforcer Roach Ridd		
Ortho boric acid	99	99.08
Enforcer Roach Ridd Spray		
Piperonyl butoxide, tech.	1.0	0.93
Pyrethrins	0.1	0.12
Enforcer Wasp & Hornet Killer		
(5-Benzyl-3-furyl) methyl 2,2-dimethyl-3-carboxyl		
(2-methyl-propenyl) cyclopropane	0.250	0.255
Celex Corp.		
Super K-Gro Broadleaf Weed Killer (Aerosol)		
Dicamba, diethanolamine salt	0.017	0.014
MCP, diethanolamine salt	0.180	0.176
2,4-D, diethanolamine salt	0.168	0.162
Super K-Gro Fruit & Vegetable Insect Control Concentrate		
Diazinon	25.0	24.10
Super K-Gro Home Pest Insect Control		
Dursban	0.50	0.49
Super K-Gro Rose and Flower Insect Killer		
Piperonyl butoxide, tech.	0.20	0.185
Pyrethrins	0.02	0.022
Super K-Gro Shoot Out		
Glyphosate, isopropylamine salt	0.96	0.99
Super K-Gro Systemic Grass and Weed Killer		
Glyphosate, isopropylamine salt	0.96	1.07
Super K-Gro Vegetation Killer Formula		
Diquat dibromide	0.23	0.200
Chacon Chem. Corp.		
Chacon Systemic Granular Insecticide		
O,O-Diethyl S-[2-(ethylthio)ethyl]phosphorothioate	1	1.10
Chevron Chem. Co./Ortho Prod. Div.		
BG Pratt Bordo-Mix Bordeaux Mixture		
Copper	12.75	13.38
Ortho Ant Killer Bait		
Baygon	0.25	0.23
Ortho Bug-Geta Deadline Snail & Slug Killer		
Metaldehyde	4	3.71
Ortho Crab Grass Killer		
Octylammonium methanearsonate	8.0	8.6
Dodecylammonium methanearsonate	8.0	8.6

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Ortho Crab Grass and Dandelion Killer		
Dodecylammonium methanarsonate	8.0	8.3
Octylammonium methanarsonate	8.0	8.3
2,4-D, octylammonium salt	8.16	7.92
Ortho Diazinon Insect Spray		
Diazinon	25	24.40
Ortho Flotox Garden Sulfur		
Sulfur	90	93.9
Ortho Funginex Rose Disease Control		
Triforine	6.5	6.90
Ortho Grass-B-Gon Grass Killer		
Fusilade	0.50	0.47
Ortho Kleenup Grass & Weed Killer		
Acifluorfen	0.12	0.15
Glyphosate	0.50	0.48
Ortho Lindane Borer & Leaf Miner Spray		
Lindane	20	19.7
Ortho Liquid Sevin		
Carbaryl	27	27.7
Ortho Malathion 50 Insect Spray		
Malathion	50	51.4
Ortho Moth-B-Gon Moth Proofer		
Phenotrhin	0.090	0.102
Tetramethrin	0.050	0.049
Ortho Multi-Purpose Fungicide Daconil 2787		
Chlorothalonil	29.6	30.90
Ortho Orthene Systemic Insect Control		
Acephate	9.4	9.60
Ortho Orthenex Insect & Disease Control		
Acephate	4.00	4.10
Kelthane	3.00	3.20
Triforine	3.25	3.30
Ortho Orthorix Lime-Sulfur Spray		
Calcium polysulfides	26	27.0
Ortho Poison Ivy & Poison Oak Killer Formula II		
Trichlopyr, triethanolamine salt	0.70	0.68
Ortho Roach Killer Bait		
Baygon	2.00	2.30
Ortho Rose & Flower Insect Killer		
Piperonyl butoxide, tech.	0.20	0.209
Pyrethrins	0.02	0.018
Ortho Rose and Flower Dust		
Carbaryl	3.0	3.30
Folpet	5.0	4.90
Kelthane	1.5	1.80
Malathion	4.0	4.80
Ortho Sevin Garden Dust		
Carbaryl	5	5.40

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Ortho Systemic Rose & Floral Spray		
Acephate	0.250	0.255
Resmethrin	0.100	0.114
Triforine	0.100	0.110
Ortho Tomato & Vegetable Insect Spray		
Piperonyl butoxide, tech.	0.167	0.160
Pyrethrins	0.030	0.040
Rotenone	0.128	0.140
Ortho Tomato & Vegetable Insect Killer		
Piperonyl butoxide, tech.	0.20	0.20
Pyrethrins	0.02	0.023
Ortho Tomato Vegetable Dust		
Captan	4.70	5.30
Methoxychlor	5.00	5.00
Rotenone	0.75	1.04
Ortho Weed-B-Gon Weed Killer		
MCPP, dimethylamine salt	0.20	0.22
2,4-D, dimethylamine salt	0.20	0.21
Ortho Weed B-Gon Lawn Weed Killer		
2,4-D, dimethylamine salt	10.8	10.7
MCPP, dimethylamine salt	11.6	11.1
Spectracide Professional Home Pest Control XP		
Diazinon	1.00	1.08
Connecticut Aerosols, Inc.		
707 Automatic Indoor Fogger Roach Bomb		
Fenvalerate	0.400	0.389
Tetramethrin	0.200	0.216
707 Automatic Indoor Fogger Roach Bomb		
Fenvalerate	0.400	0.421
Tetramethrin	0.200	0.235
C. Z.'s Insect Repellent		
di-n-Propyl isocin chromeronate	0.50	0.47
n-Octyl bicycloheptene dicarboximide	2.0	2.20
2,3,4,5-Bis(2 butylene) tetrahydro-2-furaldehyde	0.50	0.50
N,N-Diethyl-m-toluamide	6.65	7.04
C. Z.'s Insect Repellent		
di-n-Propyl isocin chromeronate	0.50	0.45
n-Octyl bicycloheptene dicarboximide	2.00	2.20
2,3,4,5-Bis(2 butylene) tetrahydro-2-furaldehyde	0.50	0.52
N,N-Diethyl-m-toluamide	6.65	6.90
Fay's Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.046
n-Alkyl dimethylethyl benzyl ammonium chlorides	0.035	0.046
o-Phenylphenol	0.109	0.107
Fay's Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.039
n-Alkyl dimethylethyl benzyl ammonium chlorides	0.035	0.038
o-Phenylphenol	0.109	0.105

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
K & B Ant & Roach Killer		
Chlorpyrifos	0.500	0.484
n-Octyl bicycloheptene dicarboximide	0.166	0.155
Piperonyl butoxide, tech.	0.100	0.103
Pyrethrins	0.050	0.049
K & B Ant & Roach Killer		
Chlorpyrifos	0.500	0.498
n-Octyl bicycloheptene dicarboximide	0.166	0.160
Piperonyl butoxide, tech.	0.100	0.108
Pyrethrins	0.050	0.048
K & B Flying Insect Killer		
Phenothrin	0.191	0.207
Tetramethrin	0.200	0.207
K & B Flying Insect Killer		
Phenothrin	0.191	0.205
Tetramethrin	0.200	0.189
K & B Spray Disinfectant		
n-Alkyl dimethylbenzyl ammonium chlorides	0.1	0.12
n-Alkyl dimethylethybenzyl ammonium chlorides	0.1	0.12
K & B Spray Disinfectant		
n-Alkyl dimethylbenzyl ammonium chlorides	0.1	0.10
n-Alkyl dimethylethybenzyl ammonium chlorides	0.1	0.10
King Pine Fly and Mosquito Killer X		
Phenothrin	0.191	0.182
Tetramethrin	0.200	0.191
King Pine Fly and Mosquito Killer X		
Phenothrin	0.191	0.178
Tetramethrin	0.200	0.190
King Spray Ant & Roach Killer		
2,2-Dichlorovinyl dimethylphosphate	0.237	0.240
2-(1-Methylethoxy) phenol methylcarbamate	0.500	0.540
King Spray Ant & Roach Killer		
2,2-Dichlorovinyl dimethylphosphate	0.237	0.257
2-(1-Methylethoxy) phenol methylcarbamate	0.500	0.510
Mr. Destroyer Insect & Roach Killer		
d-trans Allethrin	0.300	0.325
Phenothrin	0.191	0.216
Mr. Destroyer Insect & Roach Killer		
d-trans Allethrin	0.300	0.333
Phenothrin	0.191	0.225
Mr. Destroyer Roach & Ant Killer		
Chlorpyrifos	0.500	0.476
n-Octyl bicycloheptene dicarboximide	0.166	0.152
Piperonyl butoxide	0.100	0.096
Pyrethrins	0.050	0.054
Mr. Destroyer Roach & Ant Killer		
Chlorpyrifos	0.500	0.467
n-Octyl bicycloheptene dicarboximide	0.166	0.159
Piperonyl butoxide	0.100	0.101
Pyrethrins	0.050	0.057

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Pronto Lice Killing Spray		
Phenothrin	0.382	0.374
Pronto Lice Killing Spray		
Phenothrin	0.382	0.397
R & C Spray 111		
d-(cis,trans) Phenothrin	0.382	0.367
R & C Spray 111		
d-(cis,trans) Phenothrin	0.382	0.383
R & C Spray 111		
d-(cis,trans) Phenothrin	0.382	0.370
R & C Spray 111		
d-(cis,trans) Phenothrin	0.382	0.374
Rite Aid Ant & Roach Killer 4		
Allethrin	0.050	0.055
Chlorpyrifos	0.500	0.494
n-Octyl bicycloheptene dicarboximide	0.400	0.430
Rite Aid Ant & Roach Killer 4		
Allethrin	0.050	0.051
Chlorpyrifos	0.500	0.478
n-Octyl bicycloheptene dicarboximide	0.400	0.404
Rite Aid Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.038
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.035	0.038
o-Phenylphenol	0.109	0.121
Rite Aid Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.042
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.035	0.042
o-Phenylphenol	0.109	0.106
Rite Aid Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.036
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.035	0.036
o-Phenylphenol	0.109	0.116
Rite Aid Spray Disinfectant		
n-Alkyl dimethyl benzyl ammonium chlorides	0.035	0.038
n-Alkyl dimethyl ethylbenzyl ammonium chlorides	0.035	0.038
o-Phenylphenol	0.109	0.113
Swell Ant & Roach Killer		
Baygon	0.500	0.514
2,2-Dichlorovinyl dimethylphosphate	0.237	0.274
Swell Ant & Roach Killer		
Baygon	0.500	0.506
2,2-Dichlorovinyl dimethylphosphate	0.237	0.264
Cotter & Co./Tru Value Hardware Stores & Home Centers		
Green Thumb Flying Insect Killer		
Resmethrin	0.200	0.240
Allethrin	0.150	0.167
Green Thumb Home & Garden Insect Killer		
Resmethrin	0.250	0.310

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Green Thumb Rose & Flower Insect Killer		
Pyrethrins	0.004	0.0046
Rotenone	0.006	0.007
Resmethrin	-	0.017*
Green Thumb Spot Weed Killer		
2,4-D, dimethylamine salt	0.65	0.62
Green Thumb Tomato & Vegetable Insect Killer		
Pyrethrins	0.004	0.004
Rotenone	0.006	0.008
Green Thumb Wasp & Hornet Spray		
Baygon	0.50	0.52
n-Octyl bicycloheptene dicarboximide	0.33	0.32
Piperonyl butoxide, tech.	0.20	0.20
Pyrethrins	0.10	0.11
Green Thumb Weed & Grass Killer		
Ammonium sulfamate	11.36	11.64
d-Con Co., Inc./Subsidiary Sterling Drug, Inc.		
d-Con Flea & Tick Killer II		
d-trans Allethrin	0.150	0.165
n-Octyl bicycloheptene dicarboximide	1.25	1.29
3-Phenoxybenzyl d-cis and trans 2,2-dimethyl 3(2-methyl propenyl) cyclopropanecarboxylate	0.096	0.100
d-Con Flea Kill Home Fogger		
Baygon	1.000	0.9530
DDVP	0.470	0.430
Precor	0.150	0.146
d-Con Four/Gone Automatic Room Fogger Formula IV		
Allethrin	0.300	0.327
DDVP	0.465	0.480
Phenothrin	0.191	0.210
d-Con Home Pest Control Killer		
Allethrin	0.050	0.050
Chlorpyrifos	0.500	0.495
n-Octyl bicycloheptene dicarboximide	0.400	0.400
d-Con LIM-N8 Rat Killer		
Brodifacoum	0.005	0.005
d-Con Ready Mixed Kills Rats and Mice		
Warfarin	0.025	0.027
Dexol Industries		
Dexol Ant, Roach and Spider Killer		
Diazinon	0.5	0.55
Dexol Dexa-Klor Insect Spray		
Chlorpyrifos	6.70	6.60
Dexol Diazinon 25% Insect Spray		
Diazinon	25.0	24.60
Dexol Malathion Insect Control		
Malathion	50	51.90

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Dexol Rose & Floral Insect Killer		
Piperonyl butoxide, tech.	0.20	0.178
Pyrethrins	0.02	0.021
Dexol Weed-Out Lawn Weed Killer		
2,4-D, dimethylamine salt	7.59	7.46
Dicamba, dimethylamine salt	0.84	0.74
MCP, dimethylamine salt	3.66	4.25
Hartz Mountain Corp.		
Hartz Blockade for Cats		
Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate	0.09	0.083
N,N-Diethyl-m-toluamide	0.09	0.083
Hartz Blockade for Cats		
N,N-Diethyl-m-toluamide	8.85	8.83
Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate	0.09	0.092
Hartz Blockade for Cats		
N,N-Diethyl-m-toluamide	8.55	8.30
Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate	0.09	0.083
Hartz Blockade for Cats		
N,N-Diethyl-m-toluamide	8.55	8.90
Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate	0.09	0.09
Hartz Blockade for Dogs		
N,N-Diethyl-m-toluamide	8.55	8.00
Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate	0.09	0.091
My-T-Mite Bird Spray		
Piperonyl butoxide, tech.	0.065	0.060
Pyrethrins	0.040	0.030
n-Octyl bicycloheptene dicarboximide	0.120	0.100
Heartland Industries, Inc.		
Heartland Clean-Out Brand Total Release Fogger		
Baygon	1.0	1.05
DDVP	6.5	6.20
IT Works		
IT Works Roach Killing Paste		
Boric acid	52	54.9
IT Works Roach Killing Paste		
Boric acid	52	57.6
Roach Eraser		
Boric acid	52	56.6
J & L Adikes, Inc.		
Gro Well 1% Rotenone Dust		
Rotenone	1.00	1.07

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Gro Well 2% Diazinon		
Diazinon	2.00	1.95
Gro Well 5% Sevin Dust		
Carbaryl	5.00	5.10
Gro Well 50% Malathion Insect Spray		
Malathion	50.0	50.90
Gro Well Benomyl 50 W Systemic Fungicide		
Benomyl	50	50.6
Gro Well Benomyl Fungicide		
Benomyl	50.00	50.3
Gro Well Diazinon 25E Insect Spray		
Diazinon	25.00	26.60
Gro Well Diazinon 25E Insect Spray		
Diazinon	25.00	24.20
Gro Well Floral & Rose Squeeze Duster		
Carbaryl	3.00	3.60
Folpet	5.00	4.70
Malathion	4.00	4.90
Gro Well Lawn Insect Control		
Dursban	13.50	13.95
Gro Well Liquid Lawn Fungicide		
Dyrene	38	39.6
Gro Well Multi-Purpose Dust		
Carbaryl	5.00	5.70
Captan	4.00	3.95
Malathion	4.00	4.20
Gro Well No Gro Weed & Grass Killer		
Prometon	2.10	2.28
2,4-D, isooctyl ester	1.05	1.01
Gro Well No-Mix Dandelion and Broadleaf Weed Killer		
2,4-D, dimethylamine salt	0.593	0.598
Dicamba, dimethylamine salt	0.066	0.064
MCPP, dimethylamine salt	0.287	0.288
Gro Well No-Mix Flea & Tick Spray		
Piperonyl butoxide, tech.	0.60	0.17-
Pyrethrins	0.06	0.019-
Gro Well No-Mix Vegetable & Tomato Insect Killer		
Piperonyl butoxide, tech.	0.20	0.085-
Pyrethrins	0.02	0.012-
Gro Well Organic Insecticide		
Piperonyl butoxide, tech.	3.00	3.30
Pyrethrins	0.50	0.53
Rotenone	1.50	1.55
Gro Well Pro-Tek 40 Insect Spray		
Diazinon	10.0	9.60
Methoxychlor, tech.	20.0	20.90
Gro Well Tomato & Vegetable Dust		
Carbaryl	5.00	4.65
Zineb	4.50	4.92

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Kenco Chem. & Mfg. Corp.		
Spectracide Crawling Insect Control Granules		
Diazinon	5	5.1
Spectracide Diazinon Liquid		
Diazinon	25.0	25.50
Spectracide Garden and Vegetable Spray		
Piperonyl butoxide, tech.	0.20	0.193
Pyrethrins	0.02	0.02
Spectracide Lawn Weed Killer		
2,4-D, dimethylamine salt	5.87	6.75
Dicamba, dimethylamine salt	1.20	1.16
MCPP, dimethylamine salt	10.89	12.80
Spectracide Liquid Weed & Feed		
2,4-D, dimethylamine salt	5.670	6.238
Dicamba, dimethylamine salt	0.619	0.580
MCPP, dimethylamine salt	2.736	3.148
Spectracide Professional Home Pest Control		
Diazinon	0.500	0.512
Piperonyl butoxide, tech.	0.261	0.290
Pyrethrins	0.052	0.055
Spectracide Sevin Liquid		
Carbaryl	22.5	22.80
Spectracide Wasp & Hornet Killer		
Resmethrin	0.250	0.248
Spectracide Yard Flea Killer		
Dursban	6.0	6.30
Lesco, Inc.		
Lesco Three-Way Selective Herbicide		
2,4-D, dimethylamine salt	32.67	32.40
Dicamba, dimethylamine salt	2.82	2.70
MCPP, dimethylamine salt	16.36	16.26
Lynwood Laboratories, Inc.		
Shoo-fly Blast		
Diazinon	0.500	0.510
Piperonyl butoxide, tech.	0.262	0.300
Pyrethrins	0.025	0.029
Shoo-fly Hornet Jet Bomb		
Diazinon	0.500	0.500
Piperonyl butoxide, tech.	0.262	0.287
Pyrethrins	0.025	0.027
Shoo-fly Indoor Fogger		
Phenothrin	0.382	0.398
Tetramethrin	0.200	0.190
Miller Chem. & Fert. Corp.		
B6 Pratt Ant & Termite Killer		
Bendiocard	1.0	1.02
BG Pratt Cygon 2-E		
Dimethate	23.4	24.50

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Maneb Garden Fungicide		
Maneb	80	86.81
Science Ammate Weed & Brush Killer		
Ammonium sulfamate	98.9	98.3
Science Benomyl 50 W Systemic Fungicide		
Benomyl	50	51.6
Science Systemic Insecticide Granules		
Disyston	1	1.0
Nott M/G Co.		
NOTT Mole-nots		
Zinc phosphate	2.0	2.42
Nutrico, Inc.		
Dom D'Agostino's Weed & Feed with Trimec		
Dicamba	0.065	0.054
MCP	0.306	0.331
2,4-D	0.684	0.620
Dursban Lawn Insect Killer		
Chlorpyrifos	2.32	2.25
Flower Time Crabgrass Preventer		
n-Butyl-n-ethyl-a,a,a-trifluoro-2,6-dinitro-p-toluidine	1.280	0.854-
Flower Time Weed & Feed with Trimec		
Dicamba	0.072	0.063
MCP	0.341	0.362
2,4-D	0.761	0.762
Nutrico 8-2-0 Fertilizer with Team		
n-butyl-n-ethyl-a,a,a-trifluoro-2,6-nitro-p-toluidine	0.919	0.876
a,a,a-Trifluoro-2,6-dinitro-n-n-dipropyl-p-toluidine	0.495	0.438
Nutrico Weed & Feed with Trimec		
Dicamba	0.065	0.052
MCP	0.306	0.314
2,4-D	0.684	0.590
Terre Granular Turf Herbicide		
Tetrachloroisophtho-nitrile	5	5.4
O. M. Scott & Sons Co.		
Scott's Spot Dandelion Control		
Dicamba	0.31	0.32
2,4-D, alkanolamine salt	1.66	1.56
Old Fox Lawn Care		
Diazinon		
Diazinon	5	3.30-
Tetrachloroterephthalic acid, dimethyl ester	5	4.90

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Pennwalt Corp./Agchem Div.		
Endothall Turf Herbicide		
Endothall, disodium salt	19.2	19.80
Rockland Chem. Co., Inc.		
Rockland Benomyl Fungicide		
Benomyl	50	51.3
Rockland Brush & Weed Killer		
Ammonium sulfamate	48.4	48.2
Rockland Captan Garden Fungicide		
Captan	47.3	51.0
Rockland Cygon 2E		
Dimethoate	23.4	23.9
Rockland Ferbam Fungicide		
Ferbam	76	76.43
Rockland Horticultural Spray Oil		
Paraffinic oil	98.8	95.3
Rockland Liquid Fruit Tree Spray		
Captan	11.35	12.20
Carbaryl	3.00	3.20
Malathion	3.50	3.60
Methoxychlor, tech	12.00	12.50
Rockland Methoxychlor 2E		
Methoxychlor	25.0	25.6
Rockland Premium Malathion		
Malathion	50.0	49.0
Rockland PRO Insect Spray		
Rotenone	1.1	1.2
Pyrethrins	0.8	0.86
Rockland Rose & Flower Dust		
Carbaryl	3.0	3.10
Folpet	5.0	3.98-
Kelthane	1.50	1.45
Malathion	4.0	3.76
Rockland 24-3-5 40% SCU/Dursban		
Dursban	0.75	0.76
Super K-Gro Broadleaf Weed Killer		
2-(2-methyl-4-chlorphenoxy) propionic acid, dimethylamine salt	3.66	4.03
Dicamba, dimethylamine salt	0.84	0.82
2,4-Dichloro phenoxy acetic acid, dimethylamine salt	7.59	7.97
Super K-Gro Diazinon Spray		
O,O-Diethyl O-(2-isopropyl-6-methyl-4-pyrimidinyl phosphorothioate	25.00	24.80
Super K-Gro Lawn Insect Spray Dursban		
Dursban	6.70	6.75
Super K-Gro Liquid Sevin		
Carbaryl	22.5	22.20
Super K-Gro Malathion 50		
Malathion	50.0	50.50

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Super K-Gro Sevin Garden Dust Sevin	5.00	5.10
Super K-Gro Systemic Rose & Floral Case 8-12-4 o,o-Diethyl S-(2-(ethythio) ethyl) phosphorodithioate	1.0	0.99
Super K-Gro Weed & Grass Killer Prometon	3.50	3.90
2,4-D, isooctyl ester	1.50	1.58
Roxide International		
Revenge Deep Freeze Wasp & Hornet Killer Pyrethrins I & II	0.05	0.06
Rotenone	0.12	0.15
S. C. Johnson & Son, Inc.		
Raid Ant & Roach Killer Baygon	0.665	0.680
DDVP	0.186	0.174
Raid Crack & Crevice Roach Foam Chlorpyrifos	0.50	0.49
Raid Flying Insect Killer n-Octylbicycloheptene dicarboximide	0.980	0.960
Piperonyl butoxide, tech.	1.00	1.06
Pyrethrins	0.140	0.155
Tetramethrin	0.063	0.072
Raid House & Garden Formula II The Complete Bug Killer Piperonyl butoxide, tech.	1.000	1.040
Pyrethrins	0.176	0.178
Tetramethrin	0.081	0.082
Raid Wasp & Hornet Killer IV 2,2-Dichlorovinyl dimethylphosphate	0.465	0.415
o-Isopropoxyphenyl methylcarbamate	0.425	0.495
Raid Yard Guard Outdoor Fogger III d-cis, trans Allethrin	0.190	0.180
2-Hydroxyethyl n-octyl sulfide	0.950	1.03
3-Phenoxybenzyl d cis,trans 2,2-dimethyl 3- (2-methyl propenyl) cyclopropanecarboxylate	0.072	0.068
Safer, Inc.		
Safer Garden Fungicide Miticide Concentrate Sulfur	12.0	12.3
Seacoast Laboratories, Inc.		
Twin Light Benomyl Fungicide Benomyl	50	50.5
Twin Light Dustall 1% Rotenone Rotenone	1	1.1
Twin Light Liquid Sevin Carbaryl	21.50	23.00
Twin Light Methoxychlor Spray Methoxychlor	25	26.0

TABLE 2--ANALYSIS OF INDIVIDUAL SAMPLES (Continued)

Manufacturer, brand, & active ingredient	% Guarantee	% Found
Twin Light Spray all for Fruit		
Captan	7.50	4.30-
Carbaryl	5.00	4.80
Malathion	4.00	4.80
Twin Light Tomato & Vegetable Dust or Spray		
Carbaryl	5.00	5.60
Zineb	4.50	5.05
Twin Light Zineb 75% Wettable		
Zineb	17.7	21.27
Starbar		
Starbar Improved Golden Matrin Fly Bait		
Methomyl	1.000	1.200
State Chemical Mfg. Co.		
State Ready Kill with Dursban Formula 401		
Chlorpyrifos	0.50	0.86+
Resmethrin	0.10	0.11
Tru Green		
Karmex-Oust Mixture		
Karmex	1.9	1.7
Oust	0.1	0.10
Willington Termite & Pest Control		
Dursban L.O.		
Chlorpyrifos	41.5	40.90
Zema Corp.		
Zema Super Fogger		
Baygon	1.07	1.03
DDVP	0.47	0.44

* = not declared on label

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
Aeroxon	1	2	0	107
Agway	19	32	0	104
Aireactor	1	2	2-	68
Alljack	3	7	0	104
Amchem.	1	1	0	101
American Cyanamid	1	1	0	107
Bonide	23	44	1-	103
Boyle-Midway	3	5	2-	69
C & J Chem.	14	35	1-	102
Celex	7	10	0	98
Chacon	1	1	0	110
Chevron	30	50	0	106
Conn. Aerosols	34	82	0	104
Cotter & Co.	7	13	1+*	110
d-Con	6	14	0	102
Dexol	6	9	0	101
Hartz Mountain	6	13	0	94
Heartland	1	2	0	100
IT Works	3	3	0	108
J & L Adikes	19	32	4-	96
Kenco	9	16	0	105
Lesco	1	3	0	98
Lynwood Labs.	3	8	0	106
Miller Chem. & Fert.	6	6	0	103
Nott M/G	1	1	0	121
Nutrico	7	14	1-	93
O.M. Scott & Sons	1	2	0	99
Old Fox Lawn Care	2	2	1-	82
Pennwalt	1	1	0	103
Rockland	20	30	1-	102
Roxide	1	2	0	123
S.C. Johnson & Son	6	15	0	102
Safer	1	1	0	103
Seacoast Labs.	7	10	1-	104
Starbar	1	1	0	120
State Chem.	1	2	1+	141
Tru Green	1	2	0	95
Willington	1	1	0	99
Zema	1	2	0	95

* = one active ingredient not listed on label



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