8/11/82
MULTIPLE

(TOP 3P) DATA EVALUATION RECORD PAGE 1 OF 8

CASE GS0[illegible]9d NALED PM 11 12/22/81

CHEM [illegible]344 1 aled ( 1,2-dibromo-2,2-dichloroethyl d

BRANCH EEB DISC 4, TOPIC 15-50, 45

FORMULATION 3 = DUST (D)

FICHE/MASTER ID 00036935 CONTENT CAT 11

Atkins, E.L.; Greywood, E.A.; Macconald, R.L. (1975) Toxicity of Pesticides and other Agricultural Chemicals to Honey Bees: Laboratory Studies. ny University of California, Dept. of Entomology. ?: UC, Cooperative Extension. (Leaflet 2287; published study.)

SUBST. CLASS = S.

DIRECT RVW TIME = (MN) START-DATE 8/6/82 END DATE 8/6/82

REVIEWED BY: Allen W. Vaughan
TITLE: Entomologist
ORG: EEB/HED
LOC/TEL: Crystal Mall 2 / 79307

SIGNATURE: Allen W. Vaughan DATE: 8/11/82

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

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1

MULTIPLE



# DATA EVALUATION RECORD

CHEMICAL: Cycloheximide

BRANCH: EEB

FICHE/MASTER ID NUMBER: 00036935

AUTHOR: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975.

TITLE: Toxicity of Pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.

DIRECT RVW TIME= 1 hr START DATE 12-2-81 END DATE 12-2-81

REVIEWED BY: Allen W. Vaughan

TITLE: Entomologist

ORG: EEB/HED

LOC/TEL: Crystal Square #4 75641

SIGNATURE: Allen W. Vaughan DATE: 12-2-81

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APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE: DATE:

1. CHEMICAL: Multiple chemicals. See tables

2. FORMULATION: Technical

3. CITATION: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975. Toxicity of pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.
FICHE/MASTER ID 00036935

4. REVIEWER: Allen W. Vaughan
Entomologist
EEB/HED

5. DATE REVIEWED: December 2, 1981

6. TEST TYPE: Toxicity to honey bee

A. Test Species: Honey bee (Apis mellifera)

7. REPORTED RESULTS: Naled (#33) was determined to be highly toxic to honey bees in a laboratory acute contact toxicity test. When test bees were exposed to direct treatment, LD50 was determined to be 0.480 micrograms per bee. For data on other pesticides, see tables.

8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows naled to be highly toxic to honey bees.

## Materials and Methods

### Test Procedures

A bell-jar vacuum duster is used to apply the pesticide, mixed with a pyrolite dust diluent, to the test bees. Dosages of dust are weighed, bees are aspirated into dusting cages and treated, and bees are then transferred into holding cages. Observations are recorded at 12, 24, 48, 72, and 96 hours.

### Statistical Analysis

Analysis of the data was performed to enable the authors to determine LD50 values of pesticides from either dosage-mortality curves or from LC50 values. The slope value was also obtained from the dosage-mortality curve.

## Discussion/Results

See tables for LD50 values, slope values, and toxicity categories.

## Reviewer's Evaluation

A. Test Procedure

Procedures were sound.

B. Statistical Analysis

Analysis as performed by the authors was assumed to be valid. No validation was performed by EEB.

C. Discussion/Results

This study is scientifically sound.

by the other factors (0.5, 0.75, 1.25 and 1.5) to obtain the proper range of field dosages in pounds per acre. Then, using the slope value closest to the known slope value for the particular pesticide, the anticipated percent mortalities will be valid for that chemical.

We wish to emphasize that there are a few exceptions to the above rule of thumb method--those pesticides which are less hazardous as well as more hazardous than one can anticipate from the laboratory data. It is our desire that by presenting this data and these methods, decisions can be made (to select a pesticide, determine the dosage, and apply the chemical in the safest way and at the most appropriate time of day) maximizing the control of pest species while minimizing the adverse effects upon beneficial species in the treated area.

A list of the $LD_{50}$ and slope values determined at 48 hours after treatment at 80°F (26.7°C) and 65 percent relative humidity in the laboratory is given for 203 pesticides in table 1. A list of pesticides not toxic in the laboratory at dosages below 11 µg per honey bee is given for 196 pesticides in table 2. Other commonly used pesticide names or name designations appear together in tables 1 and 2. The pesticide names or other designations appearing in table 1 or 2 are arranged in alphabetical order in table 3 preceded with a numerical reference to their position in table 1 or 2 and giving the chemical definition.

*LC50 is the lethal concentration of a chemical giving a bee mortality of 50 percent; LD50 is the lethal dosage in micrograms per bee of a chemical giving 50 percent mortality.

TABLE 1. $LD_{50}$ and Slope Values Showing the Comparative Toxicity to Honey Bees in the Laboratory at 48 Hours at 80°F (26.7°C) and 65-Percent Relative Humidity.

| Reference No. | Pesticide | $LD_{50}$ in µg/Bee | Slope Value |
|---|---|---|---|
| Group I - Highly Toxic to Honey Bees | | | |
| 1 | topp | 0.001 | 0.64 |
| 2 | thionazin; Zinophos®; Nemaphos®; AC-18133; ENT 25580 | 0.042 | 9.08 |
| 3 | chlorpyrifos; Dursban®; Dowco 179 | 0.114 | 7.80 |
| 4 | dieldrin | 0.139 | 4.65 |
| 5 | carbofuran; Furadan®; HIA-10242; ENT 27164 | 0.160 | 4.31 |
| 6 | parathion | 0.173 | 7.66 |
| 7 | GC-6506 | 0.178 | 8.19 |
| 8 | dimethoate; Cygon®; DE-FEND®; ENT 24650 | 0.188 | 5.94 |
| 9 | methidathion; Supracide®; GS-13005; ENT 27197 | 0.236 | 9.06 |
| 10 | EPN; EPN-300 | 0.245 | 5.08 |
| 11 | BOE-2960; ENT 27764 | 0.268 | 9.39 |
| 12 | C-2307; ENT 27625 | 0.283 | 6.11 |
| 13 | aldicarb; Temik®; UC-21149; ENT 27093 | 0.285 | 5.64 |
| 14 | methyl parathion | 0.291 | 6.24 |
| 15 | dicrotophos; Bidrin®; SD-3562; ENT 24482 | 0.300 | 16.50 |
| 16 | phosmi; Valexon®; Baythion®; BAY-77488; ENT 27448 | 0.305 | 6.80 |
| 17 | phenthoate; CIDIAL®; Papthion®; BAY-33051; ENT 27386 | 0.306 | 4.95 |
| 18 | fenthion; Baytex®; BAY-29493; ENT 25540 | 0.308 | 7.20 |
| 19 | Lecirex®; Dowco 139®; ENT 25766; -mexiocarbamate | 0.308 | 4.92 |
| 20 | monocrotophos; Azodrin®; SD-9129; ENT 27129 | 0.350 | 7.77 |
| 21 | fensulfothion; Dasanit®; BAY-25141; ENT 24945 | 0.350 | 5.46 |
| 22 | aldrin | 0.353 | 4.98 |
| 23 | mevinphos; Phosdrin®; OS-2046; ENT 22374 | 0.360 | 7.96 |
| 24 | diazinon; DIAZINON®; G-24480 | 0.372 | 8.97 |
| 25 | Nexurol®; BAY-9026; BAY-37344; ENT 25726 | 0.375 | 3.20 |
| 26 | Methyl Dursban; Dowco 214 | 0.383 | 10.23 |
| 27 | fenitrothion; Accothion®; Folithion®; Sumithion®; BAY-41831; CP-47114; ENT 25715 | 0.383 | 4.94 |
| 28 | HIA-10586 | 0.408 | 4.26 |
| 29 | famphur; Famophos®; CL-38023 | 0.417 | 4.85 |
| 30 | Noben®; NC-A-600; ENT 27041 | 0.423 | 8.69 |
| 31 | azinphosmethyl; Guthion®; BAY-17147 | 0.423 | 6.84 |
| 32 | Imolan®; G-23611 | 0.471 | 8.70 |
| 33 | naled; Dibrom®; NK-4355 | 0.480 | 18.18 |

| | | | |
|---|---|---|---|
| 34 | dichlorvos; Vapona®; DDVP | 0.495 | 8.97 |
| 35 | BAY-93820; ENT 27659 | 0.519 | 12.80 |
| 36 | heptachlor; Velsicol 104®; Heptamul®; Drimex® H-34 | 0.526 | 5.16 |
| 37 | GS-12968 | 0.550 | 8.91 |
| 38 | lindane; gamma BHC | 0.562 | 5.07 |
| 39 | Hercules 18526 | 0.574 | 8.40 |
| 40 | Hercules 17413; ENT 27615 | 0.581 | 3.90 |
| 41 | NIA-11637 | 0.609 | 3.53 |
| 42 | pirimiphos-ethyl; PP-211 | 0.614 | 15.11 |
| 43 | NIA-10559 | 0.624 | 4.50 |
| 44 | UC-8305 | 0.628 | 2.68 |
| 45 | pirimiphos-methyl; PP-511 | 0.639 | 13.89 |
| 46 | malathion; Cythion® | 0.709 | 8.04 |
| 47 | Bomyl®; GC-3707 | 0.743 | 9.09 |
| 48 | Hercules 13462; ENT 27405 | 0.829 | 3.90 |
| 49 | UC-30045; ENT 27393 | 0.880 | 4.02 |
| 50 | Hercules 5727; UC-10854 | 0.937 | 4.34 |
| 51 | Methyl Iso-Systox | 0.937 | 3.48 |
| 52 | azinphosethyl; Ethyl Guthion®; BAY-16259; ENT 22014 | 0.981 | 7.32 |
| 53 | Sevin 4-Oil | 1.02 | 4.37 |
| 54 | C-9473; ENT 27564 | 1.04 | 8.76 |
| 55 | Imidan®; Prolate®; R-1504 | 1.06 | 4.77 |
| 56 | BP-11783 | 1.08 | 7.11 |
| 57 | Carbamult®; promecarb; Schering 34615; EP-316; SN-316 | 1.13 | 2.22 |
| 58 | Matacil®; BAY-44646; ENT 25784 | 1.16 | 3.72 |
| 59 | Orthene®; Ortho 12420; ENT 27822 | 1.20 | 8.26 |
| 60 | carbaryl; Sevin®; Compd. 7744 | 1.34 | 2.45 |
| 61 | Sevin 80S | 1.34 | 4.22 |
| 62 | propoxur; aprocarb; Baygon®; Unden®; BAY-39007; OMS-33; ENT 25671 | 1.35 | 3.30 |
| 63 | monitor; Tamaron®; BAY-71628; HR-9006 | 1.37 | 10.32 |
| 64 | Gardona®; Rabon®; SD-8447 | 1.37 | 21.45 |
| 65 | AC-12008 | 1.38 | 3.60 |
| 66 | phosphamidon; Dimecron® | 1.46 | 14.28 |
| 67 | Methyl Trithion® | 1.46 | 6.64 |
| 68 | C-8874; ENT 27409 | 1.46 | 3.93 |
| 69 | Iso-Systox | 1.49 | 1.45 |
| 70 | methomyl; Lannate®; IN-1179; Nudrin® | 1.51 | 3.03 |
| 71 | Abate®; Biothion®; AC-52160; EI-52160; ENT 27165 | 1.55 | 2.85 |
| 72 | isodrin; Compd. 711 | 1.61 | 2.63 |
| 73 | HR-6624; ENT 27760 | 1.66 | 16.86 |
| 74 | BUX®; Ortho 5353; HR-5353; ENT 27127 | 1.66 | 5.12 |
| 75 | Hercules 9007; ENT 27334 | 1.66 | 3.30 |
| 76 | Dow ET-15 | 1.83 | 6.12 |
| 77 | Mesacur P®; BAY-68138 | 1.87 | 5.25 |
| 78 | Sevimol® 4 | 1.88 | 3.82 |
| 79 | I-1642 | 1.90 | 3.00 |

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Group II - Moderately Toxic to Honey Bees

| | | | |
|---|---|---|---|
| 80 | endrin; Compd. 269 | 2.02 | 4.20 |
| 81 | HR-5030 | 2.08 | 5.28 |
| 82 | leptophos; Abar®; PHOSVEL®; VCS-506; ENT 27378 | 2.19 | 5.80 |
| 83 | Elocron®; dioxacarb; C-8353 | 2.21 | 2.98 |
| 84 | Hercules 3895 G | 2.25 | 2.84 |
| 85 | Ciodrin®; SD-4294; crotoxyphos | 2.26 | 17.10 |
| 86 | AC-12009 | 2.28 | 3.48 |
| 87 | trichloronate; Agritox®; BAY-37289; ENT 25712 | 2.33 | 3.26 |
| 88 | Benol®; BOR®; U-12927; carbenolate | 2.36 | 5.91 |
| 89 | N-4543 | 2.48 | 2.76 |
| 90 | Ortho 11775; PP-9; HR-11 | 2.51 | 4.55 |
| 91 | demeton; Systox®; BAY-8169 | 2.60 | 1.85 |
| 92 | EI-43064 | 2.62 | 4.55 |
| 93 | AKTON®; SD-9098 | 2.66 | 4.07 |
| 94 | C-30494 | 2.70 | 4.06 |
| 95 | Pyramat®; C-23330 | 2.95 | 4.07 |
| 96 | oxydemetonmethyl; Meta Systox-R®; BAY-21097 | 3.00 | 2.32 |
| 97 | C-10015; ENT 27410 | 3.14 | 2.70 |
| 98 | chlordane, α & γ isomers; HCS-3260 | 3.14 | 2.45 |
| 99 | Cytrolane®; EI-47470 | 3.51 | 6.28 |
| 100 | TD-72 | 3.58 | 4.32 |
| 101 | BAY-38156; ENT 25713 | 3.60 | 2.10 |
| 102 | BAY-30911; ENT 25635 | 3.75 | 3.68 |
| 103 | GS-10128 | 3.84 | 6.21 |
| 104 | UC-6812 | 3.94 | 3.75 |
| 105 | iodofenphos; Alfacron®; C-9491; ENT 27408 | 3.99 | 3.12 |
| 106 | GC-9160; ENT 27154 | 4.09 | 3.98 |
| 107 | GC-10284 | 4.19 | 3.21 |
| 108 | Cyolane®; EI-47031 | 4.23 | 7.32 |
| 109 | TD-73 | 4.29 | 5.64 |
| 110 | carbophenothion; Trithion®; R-1303 | 4.47 | 8.39 |
| 111 | Perthane®; Q-137 | 4.47 | 4.05 |
| 112 | GC-9879 | 4.90 | 4.14 |
| 113 | SD-7438 | 5.08 | 6.09 |
| 114 | Nissol®; NNFA | 5.14 | 3.87 |
| 115 | disulfoton; Di-Systox®; BAY-19639 | 5.14 | 1.14 |
| 116 | chlordane | 5.23 | 3.24 |
| 117 | UC-270748; UC-34096; ENT 27473 | 5.35 | 2.75 |
| 118 | DDT, p,p' isomer | 5.36 | 4.43 |
| 119 | SD-8448 | 5.74 | 8.72 |
| 120 | ronnel; Korlan®; Trolene®; Dow ET-14; Dow ET-57 | 5.74 | 2.10 |
| 121 | Benomite®; U-27415; ENT 27646 | 5.75 | 4.13 |
| 122 | GC-10101 | 5.78 | 8.58 |
| 123 | dimetilan; Dimetilan®; GS-13332 | 5.84 | 4.08 |
| 124 | DDT; ENT 1506 | 5.95 | 4.89 |
| 125 | isopropyl parathion; OXY-2168 | 6.41 | 6.86 |

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| | | | |
|---|---|---|---|
| 126 | fenoxafler; fenoflurasole; Lovozal®; BC-5016; ENT 27438 | 7.10 | 5.12 |
| 127 | DDT | 7.12 | 4.43 |
| 128 | mirex; GC-1283 | 7.15 | 3.23 |
| 129 | GC-3583; SD-8210 | 7.74 | 3.57 |
| 130 | endosulfan (ex WP50); Thiodan® | 7.81 | 3.15 |
| 131 | endothion; HIA-5767; AC-18737 | 8.00 | 7.02 |
| 132 | Trimid®; UC-20047A; ENT 25962 | 8.10 | 3.27 |
| 133 | chlordane | 8.80 | 2.34 |
| 134 | phosalone; Zolone®; BP-11974 | 8.94 | 3.83 |
| 135 | HRS-1422 | 9.55 | 3.20 |
| 136 | phorate; Thimet®; AC-3911 | 10.07 | 1.34 |
| 137 | Vydate®; IN-1410 | 10.32 | 6.43 |
| 138 | chlordecone; Kepone®; Compd. 1189 | 10.39 | 4.83 |

Group III - Relatively Nontoxic to Honey Bees

| | | | |
|---|---|---|---|
| 139 | CP-10502 | 11.00 | 3.62 |
| 140 | monuron; Saphos®; PP-175 | 11.06 | 2.03 |
| 141 | binapacryl; Morocide®; HIA-9044 | 11.60 | 9.97 |
| 142 | SD-17250 | 12.00 | 5.71 |
| 143 | sabadilla | 12.33 | 6.20 |
| 144 | formetanate; Carzol SP®; EP-332; ENT 27566 | 14.27 | 3.97 |
| 145 | CP-10516 | 14.50 | 3.20 |
| 146 | endosulfan (ex.tech.); | 16.14 | 2.34 |
| 147 | fluomethyl; Lambrol®; Mytrol®; M-2060; TH-367-I | 16.62 | 3.60 |
| 148 | α endosulfan | 17.42 | 3.02 |
| 149 | ASFOM®; HPD | 17.43 | 3.79 |
| 150 | pirimicarb; Pirimor®; PP-062 | 18.72 | 2.88 |
| 151 | ethion; Nialate® | 20.55 | 0.95 |
| 152 | dienathion; Delnav®; Hercules AC-528; ENT 22897 | 21.27 | 5.05 |
| 153 | β endosulfan | 21.79 | 3.31 |
| 154 | methoxychlor; Marlate®; DMDT | 23.57 | 1.55 |
| 155 | Bandane® | 25.68 | 4.00 |
| 156 | BAY-39731 | 26.59 | 1.27 |
| 157 | dinocap; Karathane®; ENT 27727 | 33.39 | 2.87 |
| 158 | Torak®; Hercules 14503; ENT 27320; dialifor | 34.45 | 1.30 |
| 159 | dinoseb; Elvox® PE; DNBP, alkanolamine salt | 36.26 | 4.93 |

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| | | | |
|---|---|---|---|
| 160 | Plictran®; Dowco 213; ENT 27395; M-3180 | 38.19 | 4.92 |
| 161 | Dilan®; CS-708 | 40.49 | 1.70 |
| 162 | R-23233 | 40.59 | 4.23 |
| 163 | ziram; Zerlate® | 46.65 | 2.12 |
| 164 | EP-334-HCl | 46.75 | 1.98 |
| 165 | dinobuton; Acrex®; Dessin®; UC-19786; ENT 27244 | 48.42 | 5.90 |
| 166 | toxaphene | 50.40 | 1.67 |
| 167 | EP-417 | 51.46 | 3.18 |
| 168 | EP-418 | 52.82 | 3.46 |
| 169 | trichlorfon; Dylox®; Dipterex®; ENT 19763 | 59.83 | 2.81 |
| 170 | GC-3582 | 60.43 | 4.92 |
| 171 | GC-10435 | 62.80 | 9.45 |
| 172 | PPG-124 | 65.87 | 2.40 |
| 173 | oxythioquinox; Morestan®; BAY-36205; ENT 25606 | 66.47 | 1.36 |
| 174 | SYLOID® 244 - Grade 68; SG-68 | 67.08 | 2.18 |
| 175 | thiram; Arasan®; Tersan® 75; Thylate® | 73.72 | 1.18 |
| 176 | calcium arsenate | 78.56 | 4.10 |
| 177 | Dri-Die®; SYLOID® 255-Grade 255; SG-67 | 96.69 | 4.40 |
| 178 | GC-8993; ENT 25207 | 96.69 | 1.37 |
| 179 | RH-2300 | 97.89 | 1.90 |
| 180 | GC-9832; 4FK | 98.00 | 2.68 |
| 181 | SYLOID® 378-Grade 78; SG-78 | 108 | 3.18 |
| 182 | monuron; CMU; Telvar® | 110 | 0.78 |
| 183 | Eradex®; BAY-30686; chinothionat | 121 | 1.14 |
| 184 | dicofol; Kelthane®; FW-293 | 145 | 1.52 |
| 185 | Rhothane®; DDD; TDE; ENT 4225 | 161 | 0.98 |
| 186 | SYLOID® 308-Grade 77; SG-77 | 163 | 2.65 |
| 187 | Q-128 | 179 | 0.75 |
| 188 | BAY-38733; ENT 27323 | 198 | 2.18 |
| 189 | nitrofen; TOK®; FW-925 | 275 | 3.08 |
| 190 | propachlor; Ramrod®; CP-31393 | 311 | 2.81 |
| 191 | Polyram®; ENT 26711 | 437 | 1.53 |
| 192 | fenson; Murvesco®; TriFenson®; GC-928 | 483 | 0.07 |
| 193 | molasses (feed grade) | 494 | 4.79 |
| 194 | propham; Chem-Hoe®; IPC | 604 | 0.96 |
| 195 | Bi-811® 233 | 616 | 2.47 |
| 196 | SYLOID® 74-Grade 74; SG-74 | 880 | 0.99 |
| 197 | ryania | 977 | 1.26 |
| 198 | sulfur | 1,051 | 1.38 |
| 199 | chlorobenzilate; Acaraben®; Geigy 338; G-23992 | 1,849 | 1.01 |
| 200 | dinitrocyclohexylphenol; Dinex®; DN-111; DNOCHP | 2,175 | 0.45 |
| 201 | SYLOID® 63-Grade 63; SG-63 | 3,625 | 0.91 |
| 202 | SD-14114; Vendex® Miticide; ENT 27738 | 3,982 | 0.57 |
| 203 | GC-6936 | 10,031 | 0.63 |

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TABLE 2. Pesticides Not Toxic at 11 Micrograms per Honey Bee (or highest dosage tested) in the Laboratory at 48 Hours at 80°F (26.7°C) and 65 Percent Relative Humidity. Group III - Relatively Nontoxic to Honey Bees

| Reference No. | Pesticide | % Mortality | µg/bee |
|---|---|---|---|
| 204 | allethrin; pyrethrins, synthetic; ENT 17510 | 6.00 | 0.314 |
| 205 | Bacticin® | 6.79 | 0.336 0.338 |
| 206 | pyrethrum | 11.00 | 0.63 |
| 207 | rotenone; cube; derris | 12.00 | 2.42 |
| 208 | parinol; Parnon® | 2.90 | 2.42 |
| 209 | paraquat | 2.74 | 6.04 |
| 210 | dichlone; Phygon® | 7.04 | 7.25 |
| 211 | nicotine | 3.00 | 8.70 |
| 212 | dichlofluanid; Euparen®; BAY-47531 | 3.91 | 9.06 |
| 213 | Alamine 21, primary amine; AL-21 | 2.38 | 9.06 |
| 214 | Armeen L-15; ARL-15 | 2.38 | 9.06 |
| 215 | Alamine 11, primary amine; AL-11 | 0 | 9.06 |
| 216 | Alamine 15, primary amine; AL-15; Tall oil | 0 | 9.06 |
| 217 | Alequat 221, tertiary amine; ALQ-221 | 0 | 9.06 |
| 218 | Ducomeen L-15; DL-15 | 0 | 9.06 |
| 219 | methyl chlorobenzilate | 1.09 | 9.67 |
| 220 | Aramite® | 26.00 | 12.00 |
| 221 | ferbam; Fermate® | 10.61 | 12.09 |
| 222 | Vegadex®; CDEC | 10.03 | 12.09 |
| 223 | folpet; Phaltan® | 8.97 | 12.09 |
| 224 | DDT antiresistant; WARF antiresistant for DDT; GC-6768 | 7.79 | 12.09 |
| 225 | ethephon; Ethrel®; Compd. 68-240 | 7.00 | 12.09 |
| 226 | merphos; Folex® | 6.14 | 12.09 |
| 227 | Eptam®; EPTC | 5.91 | 12.09 |
| 228 | TD-71 | 5.85 | 12.09 |
| 229 | nabam; Parzate® | 5.71 | 12.09 |
| 230 | glyodin; Glyoxide® | 5.08 | 12.09 |
| 231 | Randox®; CDAA | 4.73 | 12.09 |
| 232 | Triton X-100® | 4.51 | 12.09 |
| 233 | Benzac®; Trysben®; 2,3,6-TBA | 4.36 | 12.09 |
| 234 | amitrole; Weedazol®; Cytrol®; ATA | 4.10 | 12.09 |
| 235 | cuprous oxide | 3.52 | 12.09 |
| 236 | maneb; Manzate® | 2.98 | 12.09 |
| 237 | Triton B-1956 | 2.80 | 12.09 |
| 238 | dodine; Cyprex® | 2.45 | 12.09 |
| 239 | BIO-908; Compd. 908A; NIA-908 | 2.17 | 12.09 |
| 240 | picloram; Tordon® 22K | 7.40 | 14.50 |
| 241 | benefin; Balan® | 7.10 | 14.50 |
| 242 | copper oxychloride sulfate; C-O-C-S | 7.00 | 14.50 |
| 243 | BAY-28589 | 6.83 | 14.50 |
| 244 | barban; Carbyne® | 5.60 | 14.50 |
| 245 | 2,4-DB (dimethylamine salt); Butyrac®-118; 4-(2,4-DB) | 3.97 | 14.50 |
| 246 | cyprazid; Clobber®; S-6000 | 2.90 | 14.50 |
| 247 | amiben (ammonium salt); Amiben®; chloramben | 2.80 | 14.50 |
| 248 | benzadox; Topcide®; S-6173 | 2.40 | 14.50 |
| 249 | bromoxynil; Brominil®; Buctril® | 2.00 | 14.50 |
| 250 | D-6 | 3.33 | 16.92 |
| 251 | erbon; Baron®; Novon® | 6.60 | 18.13 |
| 252 | 2,4-D (low volatile oil soluble form); Dacamine® | 6.44 | 18.13 |
| 253 | AC-94556 | 6.20 | 18.13 |
| 254 | chlorbenside; Chloroparacide®; Mitox®; ENT 20696 | 2.00 | 18.13 |
| 255 | Omite®; Comite®; BO-14; ENT 27226 | 1.85 | 18.13 |
| 256 | mecoprop; MCPP; CMPP; 2-MCPP | 1.67 | 18.13 |
| 257 | D-048 (analogue of Aramite®) | 0 | 18.13 |
| 258 | U-36059; ENT 27967 | 9.94 | 21.15 |
| 259 | RP-2929 | 1.28 | 21.70 |
| 260 | oxadiazon; Ronstar®; RP-17623 | 1.28 | 21.70 |
| 261 | Acarol®; GS-19851; ENT 27552 | 5.50 | 24.00 |
| 262 | Dimite®; DMC; chlorfenethol | 4.95 | 24.03 |
| 263 | GC-2066 | 22.87 | 24.17 |
| 264 | GC-2131 | 13.66 | 24.17 |
| 265 | trifluralin; Treflan® | 12.85 | 24.17 |
| 266 | sesbin; Sesbin®; 2,4-DEB | 7.46 | 24.17 |
| 267 | Mylone®; DMTT | 6.25 | 24.17 |
| 268 | Ansar® 170; Daconate®; MSMA | 6.17 | 24.17 |
| 269 | dalapon; Dowpon®; Radapon® | 4.58 | 24.17 |
| 270 | 2,4-D (sodium salt) | 3.70 | 24.17 |
| 271 | Indopol® Polybutene H-300 | 3.70 | 24.17 |
| 272 | propanil; DPA; Rogue®; Stam® F-34; BAY 30130 | 3.69 | 24.17 |
| 273 | Weedar®; MCPA; Dow MCP amine weed killer | 3.62 | 24.17 |
| 274 | DEF® | 2.99 | 24.17 |
| 275 | sesone; Sesone®; SES | 2.00 | 24.17 |
| 276 | 2,4,5-T | 1.93 | 24.17 |
| 277 | C-940; UBI-C940 | 1.62 | 24.17 |
| 278 | benzulide; Betasan®; Prefar®; R-4461 | 1.60 | 24.17 |
| 279 | chloropropylate; Acaralate®; G-24163; ENT 26999 | 1.60 | 24.17 |
| 280 | Glytac® | 0.85 | 24.17 |
| 281 | GS-13798 | 0.79 | 24.17 |
| 282 | silikil | 0 | 24.17 |
| 283 | butylate; Sutan®; R-1910 | 14.95 | 26.01 |
| 284 | DDE, p,p' isomer | 16.81 | 26.59 |
| 285 | DDT, o,p' isomer | 16.43 | 26.59 |
| 286 | DDE, o,p' isomer | 15.00 | 26.59 |
| 287 | pebulate; PEBC; Tillam®; R-2061 | 13.18 | 29.01 |
| 288 | NIA-10656 | 11.97 | 29.01 |
| 289 | vernolate; Vernam®; R-1607 | 10.89 | 29.01 |
| 290 | molinate; Ordram®; R-4572 | 10.32 | 29.01 |
| 291 | cycloate; Ro-Neet®; R-2063 | 7.04 | 29.01 |
| 292 | UC-21426 | 8.58 | 30.22 |
| 293 | UC-21427 | 5.70 | 30.22 |
| 294 | Aroclor® 1221 | 2.50 | 30.22 |
| 295 | Aroclor® 1248; ENT 8078 | 1.24 | 30.22 |
| 296 | Aroclor® 1254 | 1.24 | 30.22 |
| 297 | Aroclor® 1260 | 1.20 | 30.22 |
| 298 | Aroclor® 1232 | 0 | 30.22 |
| 299 | Aroclor® 1242 | 0 | 30.22 |
| 300 | IPC + PPG - 124 @ 4:1 | 11.30 | 32.26 9.10 |

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|---|---|---|---|
| 301 | chlorpropham; CIPC; Chloro IPC; FURLOE® | 4.90 | 36.26 |
| 302 | CIPC + FPC - 124 @ 4:1 | 4.50 | 36.26 9.10 |
| 303 | maleic hydrazide; MH-30® | 4.32 | 36.26 |
| 304 | HCCPD | 2.59 | 36.26 |
| 305 | dimethyl sulfoxide; DMSO | 2.47 | 36.26 |
| 306 | metham; SMDC; VPM®; Vapam® | 2.40 | 36.26 |
| 307 | Kuron®; 2(2,4,5-TP); silvex acid, PGBE ester | 2.10 | 36.26 |
| 308 | diallate; Avadex®; DATC; CP-15366 | 2.00 | 36.26 |
| 309 | Diprop® | 2.00 | 36.26 |
| 310 | triallate; Avadex BW®; DATC-BW | 1.82 | 36.26 |
| 311 | asulam; Asulox® 60; MLB 9057 | 1.28 | 36.26 |
| 312 | Polysorbate 80®; Tween 80® | 0.86 | 36.26 |
| 313 | alachlor; Lasso®; CP-50144 | 0.41 | 36.26 |
| 314 | UNI-K840 | 2.56 | 45.30 |
| 315 | EN-38107; EP-475 | 9.68 | 48.34 |
| 316 | FLIT® MLO; BFRL-3855-2 | 9.52 | 48.34 |
| 317 | MBC | 8.34 | 48.34 |
| 318 | BFRL-5337-2 | 7.61 | 48.34 |
| 319 | polyisobutylene | 7.34 | 48.34 |
| 320 | polyisobutylene; Polytrap® | 5.60 | 48.34 |
| 321 | TCA, acid | 4.18 | 48.34 |
| 322 | pentachlorophenol, PCP: | | |
| | Dowcide® 7 Flake tech | 2.55 | 48.34 |
| | Dowcide® G sodium salt | 2.16 | 48.34 |
| 323 | MIA-10637 | 0.85 | 48.34 |
| 324 | dichloropropene; Telone® | 6.58 | 60.43 |
| 325 | BAY-78175 | 6.04 | 60.43 |
| 326 | naphtha; Espesol 300®; Herbitox® | 4.53 | 60.43 |
| 327 | NaTCA (inhibited); Sodium TCA | 3.70 | 60.43 |
| 328 | ethyl formate | 2.59 | 60.43 |
| 329 | Ammate® X; AMS | 2.90 | 60.43 |
| 330 | Frucote®; Tutane® | 2.50 | 60.43 |
| 331 | Sencor®; BAY-94337 | 2.82 | 60.00 |
| 332 | dicamba; Banvel D® | 2.58 | 90.65 |
| 333 | prometryne; Caporal®; G-34161 | 10.36 | 96.69 |
| 334 | captafol; folcid; Difolatan®; ME-5865 | 8.91 | 96.69 |
| 335 | simazine; Princep® | 6.52 | 96.69 |
| 336 | ametryne; atrametryne; Ametryne®; Evik® GS-34162 | 6.49 | 96.69 |
| 337 | atrazine; AAtrex®; Atratol®; G-30027 | 4.79 | 96.69 |
| 338 | SUMITOL®; GS-14254 | 4.55 | 96.69 |
| 339 | norea; Herban® | 3.09 | 96.69 |
| 340 | propazine; Milogard® | 2.47 | 96.69 |
| 341 | Hemagon®; Fumanone® | 13.00 | 100.00 |
| 342 | Dexon®; BAY-22555 | 40.46 | 102.00 |
| 343 | naptalam; Alanap®; NPA | 0.41 | 113.20 |
| 344 | fentin hydroxide; TPTH; DuTer® | 12.70 | 114.82 |
| 345 | chlordimeform; chlorphenamidine; Fundal®; Galecron®; ENT 27567; ENT 27335; EP-333; C-8514 | 8.49 | 114.82 |
| 346 | PREP®; UC-20299 | 3.80 | 114.82 |
| 347 | Dyrene®; Kemate®; B-622 | 4.27 | 117.23 |
| 348 | benomyl; Benlate®; F-1991 | 8.16 | 120.86 |
| 349 | Meloran®; C-6313 | 7.25 | 120.86 |
| 350 | linuron; Lorox® | 6.47 | 120.86 |

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|---|---|---|---|
| 351 | metobromuron; Patoran®; C-3126 | 5.59 | 120.86 |
| 352 | fluorodifen; Preforan®; C-6989 | 5.40 | 120.86 |
| 353 | siduron; Tupersan® | 5.30 | 120.86 |
| 354 | GC-10379 | 4.58 | 120.86 |
| 355 | chloroxuron; Tenoran® | 4.50 | 120.86 |
| 356 | ovex; Ovatran®; K-6451 | 3.17 | 120.86 |
| 357 | dichlobenil; Casaron® | 3.09 | 120.86 |
| 358 | Trefmid® (=trifluralin, 50% + diphenamid, 3.1%) | 2.70 | 120.86 |
| 359 | diuron; Karmex® | 2.77 | 145.03 |
| 360 | cacodylic acid; Phytar® 138 | 5.60 | 157.12 |
| 361 | Dikar® (=Dithane® M-45, 74% + Karathane®, 6%) | 14.59 | 178.87 14.50 |
| 362 | chlorothalonil; Daconil® 2787; Bravo® | 14.28 | 181.29 |
| 363 | nitralin; Planavin®; SD-11831 | 6.80 | 181.29 |
| 364 | Plantvax®; P-461 | 5.90 | 181.29 |
| 365 | dicloran; Botran®; DCNA; ditranil; Allisan® | 5.52 | 181.29 |
| 366 | Kerb®; EN-315 | 4.90 | 181.29 |
| 367 | methazole; Probe®; VCS-438 | 3.79 | 181.29 |
| 368 | dithianon; Thynon®; Delan® | 3.09 | 181.29 |
| 369 | carboxin; Vitavax®; D-735 | 2.00 | 181.29 |
| 370 | karbutilate; Tandex®; MIA-11092 | 8.50 | 193.38 |
| 371 | fluometuron; Cotoran® | 3.80 | 193.38 |
| 372 | Dithane® M-45 | 3.70 | 193.38 |
| 373 | pyrazon; Pyramin®; PCA | 3.30 | 193.38 |
| 374 | terbacil; Sinbar® | 2.40 | 193.38 |
| 375 | cyanazine; Bladex®; SD-15418 | 2.11 | 193.38 |
| 376 | terbutol; AZAK®; Hercules 9573 | 1.66 | 193.38 |
| 377 | bromacil; Hyvar® X | 1.20 | 193.38 |
| 378 | Alar® | 5.80 | 205.46 |
| 379 | captan; Merpan®; Orthocide® 406; ENT 26538 | 9.86 | 215.00 |
| 380 | methar; DSMA; Ansar® 184 | 9.80 | 217.55 |
| 381 | tetradifon; Tedion® | 4.33 | 217.55 |
| 382 | cryolite | 1.45 | 217.55 |
| 383 | Dacthal®-T; DAC 893; DCPA | 3.18 | 229.63 |
| 384 | GS-16068; Sancap® | 6.20 | 235.68 |
| 385 | terbutryn; Igran®; GS-14260 | 2.90 | 236.40 |
| 386 | Cam-Trol®; Thistrol®; MCPB (sodium salt) | 4.00 | 237.37 |
| 387 | diatomaceous earth | 18.33 | 241.72 |
| 388 | Prismite MSX | 12.11 | 241.72 |
| 389 | calcium carbonate | 8.22 | 241.72 |
| 390 | diphenamid; Dymid®; Enide® | 7.29 | 241.72 |
| 391 | phenmedipham; Betanal®; EP-452; S-4075 | 2.95 | 241.72 |
| 392 | olancha clay | 2.02 | 241.72 |
| 393 | VIRON/H®; Heliothis virus | 0.58 | 241.72 |
| 394 | silikil (heavy) | 0.49 | 241.72 |
| 395 | Attaclay® | 0.43 | 241.72 |
| 396 | fenoprop; silvex acid(tech.); 2(2,4,5-TP) | 0.41 | 241.72 |
| 397 | cycloheximide; ACTI-AID®; Actidione® | 0 | 241.72 |
| 398 | pyrophyllite, Pyrol® | 1.28 | 362.60 |
| 399 | Bacillus thuringiensis Berliner; Thuricide®; Biotrol® | non-toxic @ 726,000 spores/bee | |

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