

4/20/83

DCNA Registration Standard - Nontarget Insects

Effects on Beneficial Insects

The following study received full review under this topic:

<u>Author</u>	<u>ID</u>
Atkins et al.	00036935

Study is outlined in Table 1.

Table 1. Toxicity studies on beneficial insects with DCNA.

<u>Species</u>	<u>Formulation</u>	<u>Results</u>	<u>Author</u>	<u>Date</u>	<u>MRID#</u>
Honey bee (<u>Apis mellifera</u>)	Technical	At 181.29 micrograms per bee, mortality was 5.52% (relatively non-toxic)	Atkins et al.	1975	00036935

There is sufficient information to characterize DCNA as relatively non-toxic to honey bees.

DCNA Registration Standard - Nontarget Insects

The following study received abbreviated review:

<u>Author</u>	<u>ID</u>
Atkins	00059460

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DCNA Registration Standard - Nontarget Insects

Statement for Disciplinary Review

Effects of DCNA on beneficial insects

DCNA was shown to be relatively non-toxic to honey bees in a laboratory study (Atkins et al. 1975.)

Reference (for Disciplinary Review)

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. 38 pp. MRID# 00036935.

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TABLE A

GENERIC DATA REQUIREMENTS FOR DCNA

Data Requirement	Composition	1/ Use Pattern	2/ Requirement? (Yes, No or Partially)	Does EPA Have Data To Satisfy This Requirement?	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
S158.155 Nontarget Insect						
<u>NONTARGET INSECT TESTING - POLLINATORS:</u>						
141-1 - Honey bee acute contact LD50	TGAI	A,B	Yes		00036935	No
141-2 - Honey bee - toxicity of residues on foliage	TEP	No ^{4/}	No			No
141-3 - Wild bees important in alfalfa pollination - toxicity of residues on foliage	TEP	No ^{5/}	No			No
141-4 - Honey bee subacute feeding study	[Reserved] ^{6/}					
141-5 - Field testing for pollinators	TEP	No ^{4/}	No			No

1/ Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
 2/ The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
 3/ Data must be submitted no later than _____.
 4/ As pesticide tested low in toxicity in first level test, no further testing is required.
 5/ Required only for pesticides intended for foliar application to seed alfalfa.
 6/ Reserved pending development of test methodology.
 7/ Reserved pending decision as to whether the data requirement should be established.

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TABLE A

GENERIC DATA REQUIREMENTS FOR DCNA

Data Requirement	Composition	Use Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
<u>\$158.155 Nontarget Insect (continued)</u>					
<u>NONTARGET INSECT TESTING - AQUATIC INSECTS:</u>					
142-1 - Acute toxicity to aquatic insects	[Reserved] 7/				
142-2 - Aquatic insect life-cycle study	[Reserved] 7/				
142-3 - Simulated or actual field testing for aquatic insects	[Reserved] 7/				
143-1 - <u>NONTARGET INSECT TESTING - PREDATORS AND PARASITES</u> thru 143-3	[Reserved] 7/				

CHEM 031301

DCNA

BRANCH EEB

DISC

FORMULATION Technical

FICHE/MASTER ID 00036935

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.

SUBST. CLASS=

OTHER SUBJECT DESCRIPTORS
PRIM:

DIRECT REVIEW TIME= (MH) START DATE 4/14/83 END DATE 4/14/83

REVIEWED BY: Allen W. Vaughan
TITLE: Entomologist
ORG: EEB/HED
LOC./TEL: Crystal Mall #2/ 557-9307

SIGNATURE: *Allen W. Vaughan* DATE: 4/20/83

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

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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: April 14, 1983
6. TEST TYPE: Toxicity to honey bee
 - A. Test Species: Honey bee (Apis mellifera)
7. REPORTED RESULTS: DCNA (#365) was determined to be relatively non-toxic to honey bees in a laboratory acute contact toxicity test. When test bees were exposed to direct treatment at 181.29 micrograms/bee, mortality was 5.52%. For data on other pesticides, see tables.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows DCNA to be relatively non-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.

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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 LD50 and slope values determined at 48 hours after treatment at 80F (26.7C) 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.

*LD50 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. LD50 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 1 - Highly Toxic to Honey Bees			
1	tepp	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 [®] ; NIA-10242; ENT 27164	0.160	4.31
6	parathion	0.175	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	HOE-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	phoxim; Valeron [®] ; Baythion [®] ; BAY-77488; ENT 27448	0.305	6.80
17	phenothoate; CIDLAL [®] ; Paphthion [®] ; BAY-33051; ENT 27386	0.306	4.95
18	fenthion; Baytex [®] ; BAY-29493; ENT 25540	0.308	7.20
19	Zectran [®] ; Dowco 139 [®] ; ENT 25766; mexicarbamate	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	Mesuroi [®] ; BAY-9026; BAY-37344; ENT 25726	0.375	3.20
26	Methyl Dursban; Dowco 214	0.383	10.23
27	fenitrothion; Accothion [®] ; Folithion [®] ; Sumfthion [®] ; BAY-41831; CP-47114; ENT 25715	0.383	4.94
28	NIA-10586	0.408	4.26
29	famphur; Famophos [®] ; CL-38023	0.417	4.85
30	Mobam [®] ; MC-A-600; ENT 27041	0.423	8.69
31	azinphosmethyl; Guthion [®] ; BAY-17147	0.423	6.84
32	Isolan [®] ; G-23611	0.471	8.70
33	naled; Dibrom [®] ; RE-4355	0.480	18.18

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

Group II - Moderately Toxic to Honey Bees

80	endrin; Compd. 269	2.02	4.20	102	BAY-30911; ENT 25635	3.75	3.68
81	RE-5030	2.08	5.28	103	GS-10128	3.84	6.21
82	leptophos; Abax [®] ; PHOSVEL [®] ; VCS-506; ENT 27378	2.19	5.80	104	UC-6812	3.94	3.75
83	Elocron [®] ; dioxacarb; C-8353	2.21	2.98	105	iodofenphos; Alfacron [®] ; C-9491; ENT 27408	3.99	3.12
84	Hercules 3895 G	2.25	2.84	106	GC-9160; ENT 27154	4.09	3.98
85	Ciodrin [®] ; SD-4294; crotoxyphos	2.26	17.10	107	GC-10284	4.19	3.21
86	AC-12009	2.28	3.48	108	Cyolane [®] ; EI-47031	4.23	7.32
87	trichloronate; Agritox [®] ; BAY-37289; ENT 25712	2.33	3.26	109	TD-73	4.29	5.64
88	Banol [®] ; SOK [®] ; U-12927; carbanolate	2.36	5.91	110	carbophenothion; Trithion [®] ; R-1303	4.47	8.39
89	N-4543	2.48	2.76	111	Perthane [®] ; Q-137	4.47	4.05
90	Ortho 11775; PP-9; RE-11	2.51	4.55	112	GC-9879	4.90	4.14
91	demeton; Systox [®] ; BAY-8169	2.60	1.85	113	SD-7438	5.08	6.09
92	EI-43064	2.62	4.55	114	Nissol [®] ; MNFA	5.14	3.87
93	AKTON [®] ; SD-9098	2.66	4.07	115	dialufoton; Di-Syston [®] ; BAY-19639	5.14	1.14
94	G-30494	2.70	4.06	116	chlordan	5.23	3.24
95	Pyramat [®] ; G-23330	2.95	4.07	117	UC-27074S; UC-34096; ENT 27473	5.35	2.75
96	oxydemetonmethyl; Meta Systox-R [®] ; BAY-21097	3.00	2.32	118	DDT, p,p' isomer	5.36	4.43
97	C-10015; ENT 27410	3.14	2.70	119	SD-8448	5.74	8.72
98	chlordan, α & γ isomers; HCS-3260	3.14	2.45	120	ronnel; Korlan [®] ; Trolene [®] ; Dow ET-14; Dow ET-57	5.74	2.10
99	Cyrolane [®] ; EI-47470	3.51	6.28	121	Banomite [®] ; U-27415; ENT 27646	5.75	4.13
100	TD-72	3.58	4.32	122	GC-10101	5.78	8.58
101	BAY-38156; ENT 25713	3.60	2.10	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	fenoxaflor; fenoflurazole; Lovoza [®] ; NC-5016; EMT 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; NIA-5767; AC-18737	8.00	7.02
132	Tranid [®] ; UC-20047A; EMT 25962	8.10	3.27
133	chlordan	8.80	2.34
134	phosalone; Zolone [®] ; RP-11974	8.94	3.83
135	HES-1422	9.55	3.20
136	phorate; Thimer [®] ; 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	menazon; Saphos [®] ; PP-175	11.06	2.03
141	binapacryl; Morocide [®] ; NIA-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	fluenethyl; Lambrol [®] ; Myttol [®] ; M-2060; TH-367-I	16.62	3.60
148	α endosulfan	17.42	3.02
149	ASPO [®] ; NPD	17.43	3.79
150	pirimicarb; Pirimor [®] ; PP-062	18.72	2.88
151	ethion; Nialate [®]	20.55	0.95
152	dioxathion; Delnav [®] ; Hercules AC-528; ENT 22897	21.27	5.05
153	β endosulfan	21.79	3.31
154	methoxychlor; Mariate [®] ; 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; EMT 27320; dialifor	34.45	1.30
159	dinoseb; Sinox [®] PE; DMBP, 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; Dylor [®] ; 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; EMT 25606	66.47	1.36
174	SYLOID [®] 244 - Grade 68; SG-68	67.08	2.18
175	thiram; Aressan [®] ; 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-58733; ENT 27323	198	2.18
189	nitrofen; TOR [®] ; 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	HI-S11 [®] 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		225	ethephon; Ethrel®; Compd. 68-240	7.00 12.09
205	Bacticin®	6.79	0.336 0.338		226	merphos; Folex®	6.14 12.09
206	pyrethrum	11.00	0.63		227	Eptam®; EPTC	5.91 12.09
207	rotenone; cube; derris	12.00	2.42		228	TD-71	5.85 12.09
208	parinol; Parnon®	2.90	2.42		229	nabam; Parzate®	5.71 12.09
209	paraquat	2.74	6.04		230	glyodin; Glyoxide®	5.08 12.09
210	dichlone; Phygon®	7.04	7.25		231	Randox®; CDAA	4.73 12.09
211	nicotine	3.00	8.70		232	Triton X-100®	4.51 12.09
212	dichlofluanid; Euparen®; BAY-47531	3.91	9.06		233	Benzac®; Trysben®; 2,3,6-TBA	4.36 12.09
213	Alamine 21, primary amine; AL-21	2.38	9.06		234	amitrole; Weedazol®; Cytrol®; ATA	4.10 12.09
214	Armeen L-15; ARL-15	2.38	9.06		235	cuprous oxide	3.52 12.09
215	Alamine 11, primary amine; AL-11	0	9.06		236	maneb; Manzate®	2.98 12.09
216	Alamine 15, primary amine; AL-15; Tall oil	0	9.06		237	Triton B-1956	2.80 12.09
217	Alequat 221, tertiary amine; ALQ-221	0	9.06		238	dodine; Cyprex®	2.45 12.09
218	Duomeen L-15; DL-15	0	9.06		239	BIO-908; Compd. 908A; NIA-908	2.17 12.09
219	methyl chlorobenzilate	1.09	9.67		240	picloram; Tordon® 22K	7.40 14.50
220	Aramite®	26.00	12.00		241	benefin; Balan®	7.10 14.50
221	ferbam; Fermate®	10.61	12.09		242	copper oxychloride sulfate; C-O-C-S	7.00 14.50
222	Vegedex®; CDEC	10.03	12.09		243	BAY-28589	6.83 14.50
223	folpet; Phaltan®	8.97	12.09		244	barban; Carbyne®	5.60 14.50
224	DDT antiresistant; WARP antiresistant for DDT; GC-6768	7.79	12.09		245	2,4-DB (dimethylamine salt); Butyrac®-118; 4-(2,4-DB)	3.97 14.50
					246	cyproimid; 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; Bromintil®; Buctril®	2.00 14.50
					250	D-6	3.33 16.92
251	erbon; Baron®; Novon®	6.60	18.13		275	sesone; Sesone®; SES	2.00 24.17
252	2,4-D (low volatile oil soluble form); Dacamine®	6.44	18.13		276	2,4,5-T	1.93 24.17
253	AC-94556	6.20	18.13		277	C-940; UNI-C940	1.62 24.17
254	chlorbenside; Chloroparacide®; Mitox®; ENT 20696	2.00	18.13		278	bensulide; Betasan®; Prefar®; R-4461	1.60 24.17
255	Omite®; Comite®; DO-14; ENT 27226	1.85	18.13		279	chloropropylate; Acaralate®; G-24163; ENT 26999	1.60 24.17
256	mecoprop; MCP; CMPP; 2-MCPP	1.67	18.13		280	Glytac®	0.85 24.17
257	D-048 (analogue of Aramite®)	0	18.13		281	GS-13798	0.79 24.17
258	U-3609; ENT 27967	9.94	21.15		282	silikil	0 24.17
259	RP-2929	1.28	21.70		283	butylate; Sutan®; R-1910	14.95 26.01
260	oxadiazon; Ronstar®; RP-17623	1.28	21.70		284	DDE, D,E' isomer	16.81 26.59
261	Acarol®; GS-19851; ENT 27552	5.50	24.00		285	DDT, D,E' isomer	16.43 26.59
262	Dimite®; DMC; chlorfenethol	4.95	24.03		286	DDE, D,E' isomer	15.00 26.59
263	GC-2066	22.87	24.17		287	pebulate; FEBC; Tillam®; R 2061	13.18 29.01
264	GC-2131	13.66	24.17		288	NIA-10656	11.97 29.01
265	trifluralin; Treflan®	12.85	24.17		289	vernolate; Vernam®; R-1607	10.89 29.01
266	sessin; Sestin®; 2,4-DEB	7.46	24.17		290	mollinate; Ordram®; R-4572	10.32 29.01
267	Mylone®; DMTT	6.25	24.17		291	cycloate; Ro-Neet®; R-2063	7.04 29.01
268	Ansar® 170; Daconate®; MSMA	6.17	24.17		292	UC-21426	8.58 30.22
269	dalapon; Dowpon®; Radapon®	4.58	24.17		293	UC-21427	5.70 30.22
270	2,4-D (sodium salt)	3.70	24.17		294	Aroclor® 1221	2.50 30.22
271	Indopol® Polybutene H-300	3.70	24.17		295	Aroclor® 1248; ENT 8078	1.24 30.22
272	propanil; DPA; Rogue®; Stam® F-34; BAY 30130	3.69	24.17		296	Aroclor® 1254	1.24 30.22
273	Weedar®; MCPA; Dow MCP amine weed killer	3.62	24.17		297	Aroclor® 1260	1.20 30.22
274	DEF®	2.99	24.17		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 + PPG - 124 @ 4:1	4.50	36.26 9.10
303	maleic hydrazide; MI-30®	4.32	36.26
304	HCCPP	2.59	36.26
305	dimethyl sulfoxide; DMSO	2.47	36.26
306	metham; SHDC; VPM®; Vapan®	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	Pipron®	2.00	36.26
310	crisillate; Avadex E®; DATC-EW	1.82	36.26
311	asulam; Asulox® 60; M&B 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	SN-38107; EP-475	9.68	48.34
316	FLIT® MLO; BPRL-3855-2	9.52	48.34
317	MBC	8.34	48.34
318	BPRL-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 Dowcide® G sodium salt	2.55 2.16	48.34 48.34
323	NIA-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	Amate® 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®; RE-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	Nemagon®; Fumazone®	13.00	100.00
342	Dexon®; BAY-22555	40.46	102.00
343	naptaam; 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	FREP®; 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	Maloran®; C-6313	7.25	120.86
350	linuron; Lorox®	6.47	120.86

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351	metobromuron; Fatoran®; 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®; F-461	5.90	181.29
365	dicloran; Botran®; DCNA; ditranil; Allisan®	5.52	181.29
366	Kerb®; RH-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®; NIA-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; AZAR®; 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; DSNA; 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	Can-Trol®; Thistrol®; MCPB (sodium salt)	4.00	237.37
387	diatomaceous earth	18.33	241.72
388	Friante MX	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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CASE GS0113

DCNA

PM PM# 08/23/82

CHEM 031301

2,6-Dichloro-4-nitroaniline

BRANCH EEB DISC 40 TOPIC 05050045

FORMULATION 99 - FORMULATION NOT IDENTIFIED

FICHE/MASTER ID 00059460 CONTENT CAT 12

Atkins, E.L. (1975) Letter sent to Charles A. Hanson dated Sep 30, 1975 (Laboratory tests on pesticides tested for comparative honey bee toxicity). (Unpublished study received Aug 19, 1976 Under 8340-EX-3; prepared by Univ. of California--Riverside, Citrus Research Center and Agricultural Experiment Station, Dept. of Entomology, submitted by American Hoechst Corp., Somerville, N.J.; CDL:095253-AJ)

SUBST. CLASS = S.

DIRECT RVW TIME = (MH) START-DATE 4/28/83 END DATE 4/28/83

REVIEWED BY: Allen W. Vaughan
TITLE: Entomologist
ORG: EEB/HED
LOC/TEL: Crystal Mall #2 / 557-9307

SIGNATURE: *Allen W. Vaughan*

DATE: 4/28/83

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE:

DATE:

Study not relevant.

Study is irrelevant to the development of the nontarget insect portion of the registration standard for DCNA. Information provided in this study has been reviewed previously in another study.