US EPA ARCHIVE DOCUMENT

UNDATED

Naled Registration Standard - Nontarget Insects

Effects on Beneficial Insects

The following studies received full review under this topic:

Author	ID
Atkins et al.	00036935
Johansen	00037799
Johnansen and Eves	00060628
Johansen	05000837
Harris and Svec	05011163

Studies are outlined in Table 1.

Table 1. Toxicity studies on beneficial insects with naled.

Species	Formulation	Results	Author	Date	MRID#
Honey bee (*Apis mellifera*)	Technical	LD_{50}=0.4800 micrograms per bee (highly toxic)	Atkins et al	1975	00036935
Honey bee	Technical	solutions of .01% to 1.0% caused 79-100% mortality (highly toxic)	Harris and Svec	1969	0501163
Honey bee Alkali bee (*Nomia melanderi*) Leafcutter bee (*Megachile rotundata*)	4 lb. E	At 1 lb. AI/A, 1-hr. residues highly toxic to all species. One-day residues rel. non-toxic to all species.	Johansen and Eves	1965	00060628
Honey bee Alkali bee Leafcutter bee	8 lb. EC	At .5 lb AI/A, 3-hr residues low to mod. in tox. to honey bee (21% mort.) and alkali bee (30% mort.), highly toxic to leafcutter bee (100% mort.)	Johansen	1972	05000837
Honey bee	20% WP, 8 lb/gal EC	Highly toxic residues, but residual toxicity is short-lived.	Johansen	1961	00037799

Naled Registration Standard - Nontarget Insects

Statements for Disciplinary Review

Effects of naled on beneficial insects

Naled was shown to be highly toxic to honey bees (Atkins et al. 1975, Harris and Svec 1969, Johansen 1961, and Johansen and Eves 1965) and alfalfa leafcutter bees (Johansen 1972, Johansen and Eves 1965) when bees were exposed to direct treatment or to short-term (less than 3 hr.) residues. Short-term residues were moderately to highly toxic to alkali bees (Johansen 1972, Johansen and Eves 1965).

In all of the above studies which dealt with residues (Johansen 1961, 1972, Johansen and Eves 1965), data indicated a significant decrease in residual toxicity from 3 to 24 hours posttreatment.

Effects of naled on nontarget soil and surface invertebrates.

In laboratory studies, toxicity of naled to parasitic wasps and predaceous beetles was highly variable, depending on test species and concentration of toxicant. (Bartlett 1963, 1966.) No general statement can be made at this time.

In one laboratory study, naled was highly toxic to a predaceous mite, *Amblyseius hibisci* (Bartlett 1964.)

Naled Registration Standard - Nontarget Insects

The following studies received abbreviated reviews:

Author	ID
Amer. Cyanamid Co.	00001378
Rhone-Poulenc, Inc.	00006660
Chipman Chem. Co.	00006661
Atkins et al.	00037798
Univ. of Calif.	00049252
Atkins and Anderson	00049254
Anderson and Atkins	00060631
Atkins and Anderson	00060633
Univ. of Calif.	00061021
Atkins et al.	00066220
Harris and Svec	00078515
Womeldorf et al.	05000820
Bartlett	05009955
Caron	GS092016

Naled Registration Standard - Nontarget Insects

Effects on Nontarget Soil and Surface Invertebrates

The following studies received full review under this topic:.

Author	ID
Bartlett	05003978
Bartlett	05004148
Bartlett	05005640

Studies are outlined in Table 1.

Table 1. Toxicity studies on nontarget soil and surface invertebrates with naled.

Species	Formulation	Results	Author	Date	MRID#
Eleven species of parasitic wasps and predaceous beetles	8 lb/gal EC	At .50 lb AI/100 gal, toxicity ranged from non-toxic to highly toxic, depending on species tested.	Bartlett	1963	05003978
Predaceous mite (*Amblyseius hibisci*)	8 lb/gal EC	At .50 lb AI/100 gal., highly toxic	Bartlett	1964	05004148
Parasitic wasps (*Aphytis melinus*, *Metaphycus luteolus*) Predaceous beetles (*Lindorus lophanthae*, *Cryptolaemus montrouzieri*)	8 lb/gal EC	At 0.0477% Conc. in honey, zero to low tox. to all species. At 0.477% conc. in honey, zero to low tox. to beetles, high tox. to wasps	Bartlett	1966	05005640

Data indicate that toxicity of naled to parasitic wasps and predaceous beetles is highly variable, depending on species tested, concentration of toxicant, etc. In one study, naled tested highly toxic to a predaceous mite.

There are presently no guidelines requirements for evaluating toxicity to non-target insects.

There is sufficient information to characterize naled as highly toxic to honey bees, when bees are exposed to direct application or to short-term (less than 3 hr.) residues. Data indicate a rapid decrease in residual toxicity from 3-24 hours posttreatment.

There is sufficient information to characterize naled as highly toxic to leafcutter bees and moderately to highly toxic to alkali bees, when bees are exposed to short-term (less than 3 hr.) residues. Again, data indicate a significant decrease in residual toxicity from 3-24 hours posttreatment.

There are presently no guidelines requirements for evaluating toxicity to nontarget insects.

Naled Registration Standard - Nontarget Insects

References (for Disciplinary Review)

Atkins, E.L.; Greywood, E.A.; Macdonald, R.L. (1975) Toxicity of Pesticides and Other Agricultural Chemicals to Honey Bees: Laboratory Studies. By University of California, Dept. of Entomology. ?: UC, Cooperative Extension. (Leaflet 2287; published study.) FICHE/MASTER ID 00036935.

Bartlett, B.R. 1963. The contact toxicity of some pesticide residues to hymenopterous parasites and Coccinellid predators. J. Econ. Entomol. 56(5):694-698. FICHE/MASTER ID 05003978

Bartlett, B.R. 1964. The toxicity of some pesticide residues to adult Amblyseius hibisci, with a compilation of the effects of pesticides upon Phytoseiid mites. J. Econ. Entomol. 57(4): 559-562. FICHE/MASTER ID 05004148.

Bartlett, B.R. 1966. Toxicity and acceptance of some pesticides fed to parasitic hymenoptera and predatory Coccinellids. J. Econ. Entomol. 59(5):1142-1149. FICHE/MASTER ID 05005640.

Harris, C.R.; Svec, H.J. 1969. Laboratory studies on the contact toxicity of some insecticides to honeybees. Pages 165-167, In Proceedings of the Entomological Society of Ontario. Vol. 100. Guelph, Ontario, Canada: Entomological Society of Ontario. (Research Institute, Canada Dept. of Agriculture, London, Ontario, Contribution No. 439) FICHE/MASTER ID 05011163.

Johansen, C. 1961. Bee poisoning investigations, 1961. Report No. 8577. (Unpublished study rec'd. Mar. 26, 1975 under 3125-EX-119; prepared by Wash. St. Univ., subm. by Mobay Chemical Corp., Kansas City, Mo.; CDL:094390-I) FICHE/MASTER ID 00037799

Johansen, C.A. (1972) Toxicity of field-weathered insecticide residues to four kinds of bees. Environmental Entomology 1(3):393-394. FICHE/MASTER ID 05000837.

Johansen, C.A.; Eves, J. (1965) Bee Poisoning Investigations, 1965: Report No. G-1705; Report No. 17338. (Unpublished study, including letter dated Jun 12, 1973 from C.A. Johansen to A.D. Cohick, received Mar 27, 1974 under 4F1485; prepared by Washington State Univ., Dept. of Entomology, submitted by Chemagro Corp., Kansas City, Mo.; CDL:092011-I) FICHE/MASTER ID 00060628.