



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

6/3/85-

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

To: George LaRocca, PM 15
Registration Division (TS-767)

Thru: Harry T. Craven *Harry T. Craven*
Section 4, EEB/HED

Thru: Michael Slimak, Chief *M. Slimak*
EEB/HED

Subject: Lindane Registration Standard (beneficial insects portion)

Attached is a copy of EEB's Data Evaluation Records, Topical summaries and Disciplinary Review for Lindane (beneficial insect portion only).

Richard M. Lee 4/3/85

Richard M. Lee
Entomologist
EEB/HED

cc: Judy Heckman
John Tice

Lindane Registration Standard
(Beneficial insects and nontarget
surface invertebrate

The following studies were sent to EEB but are not cited in Topical Summaries.
They received only an abbreviated review.

<u>Author(s)</u>	<u>Fiche ID No.</u>
Atkins, E. L. et al. (1973)	00028772
Atkins, E. L. et al. (1969)	00037798

Effects on Beneficial Insects

Two studies were received and evaluated under this topic. The studies are acceptable for use in a hazard assessment and listed as follows:

<u>Author</u>	<u>ID</u>
Atkins et al. (1975)	00036935

The acceptable beneficial insects data are listed below:

<u>Species</u>	<u>Formulation</u>	<u>Results</u>	<u>Author</u>	<u>Date</u>	<u>ID</u>
honeybee (Apis mellifera)	Formulated product % a.i. unknown	Highly toxic to honeybee. The LD50 was 0.562 ug/bee with a slope value of 5.07	Atkins	1975	00036935
"	"	Highly toxic to honeybee. Contact LD50 = 0.46, 0.20 ug/bee Oral LD50 = 0.45, 0.76 ug/bee	Stevenson	1978	05001991

There is sufficient information to characterize Lindane as highly toxic to honeybees based on acute oral and contact toxicity study.

Precautionary Labeling

Based upon available information the environmental precautions label should bear the following statement regarding toxicity to honeybees.

" This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product on blooming crops or weeds if bees are visiting the treatment area."

Effects on Nontarget Soil and Surface Invertebrates

Two studies were received and evaluated under this topic.
these studies were acceptable for use in a hazard assessment and listed as follows:

<u>Author</u>	<u>ID</u>
Bartlett (1963)	05003978
Bartlett (1966)	05005640

The acceptable nontarget surface invertebrate data are listed as follows:

<u>Species</u>	<u>Results</u>	<u>Author</u>	<u>date</u>	<u>ID</u>
Hymenopterous parasites: <u>Aphytis lignanensis</u> <u>Metaphycus luteolus</u> <u>Splangia drosophilae</u> <u>Meatphycus helvolus</u> <u>Leptomastix dactylopii</u>	Toxicities varied from nontoxic to highly toxic depending on species	Bartlett	1963	05003978
Coccinellid predators: <u>Cryptolaemus montrouzieri</u> <u>Hippodamia convergens</u> <u>Lindorus lophanthae</u> <u>Rodolia cardinalis</u> <u>Stethorus picipes</u> <u>Hippodamia quinquesignata</u>				
<u>Aphytis melinus</u> <u>Metaphycus luteolus</u> <u>Lindorus lophanthae</u> <u>Cryptolaemus montrouzieri</u>	" "	"	1966	05005640

There is sufficient information to characterize that toxicity of lindane to beneficial parasitic or predacious insects varied from nontoxic to highly toxic *depending on species tested.

* LT50 < 24 h at recommended rate

Ecological Effects

Disciplinary Review

1. Ecological Effects Profile

B. Formulated Material

a. Effects on Beneficial Insects

The acute toxicity of lindane to honeybees are 0.2 - 0.562 ug/bee (acute contact) and 0.45 - 0.76 ug/bee (acute oral)(Atkins, 00036935; Stevenson, 05001991). There is sufficient information to characterize formulated lindane as highly toxic to honeybees.

b. Effects on Nontarget Soil and surface Invertebrates

Toxicity of lindane to beneficial parasitic or predacious insects at recommended rates varied from nontoxic to highly toxic (LT50 <24 hrs) depending on species tested.

TABLE A
GENERIC DATA REQUIREMENTS FOR LINDANE

Requirement	Composition ^{1/}	Use Pattern ^{2/}	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)? ^{3/}
58.155 Nontarget Insect					
NONTARGET INSECT TESTING - POLLINATORS:					
11-1 - Honey bee acute contact LD ₅₀	TGAI	AG ^{8/}	Yes	00036935 05001991	No
11-2 - Honey bee - toxicity of residues on foliage	TEP	AG ^{8/}	No		Yes ^{4/}
11-4 - Honey bee subacute feeding study	[Reserved] ^{5/}				
11-5 - Field testing for pollinators	TEP	AG ^{8/}	No		No <u>6/</u>

Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
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.
Data must be submitted no later than
As data from acute contact test indicate high toxicity, data on residual toxicity are required.
Requirement reserved pending development of test methodology.
Requirement applied on a case-by-case basis. Data reviewed to date do not indicate the need for a study.
Reserved pending Agency decision as to whether data requirement should be established.
Not required because application to trunks does not expose beneficial insects.

- / Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
- / 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.
- / Data must be submitted no later than
- / As data from acute contact test indicate high toxicity, data on residual toxicity are required.
- / Requirement reserved pending development of test methodology.
- / Requirement applied on a case-by-case basis. Data reviewed to date do not indicate the need for a study.
- / Reserved pending Agency decision as to whether data requirement should be established.
- / Not required because application to trunks does not expose beneficial insects.

7

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) 3/
158.155 Nontarget Insect (continued) .					
NONTARGET INSECT TESTING - AQUATIC INSECTS:					
12-1 - Acute toxicity to aquatic insects	[Reserved] 7/				
42-2 - Aquatic insect life-cycle study	[Reserved] 7/				
42-3 - Simulated or actual field testing for aquatic insects	[Reserved] 7/				
43-1 - NONTARGET INSECT TESTING- PREDATORS AND PARASITES	[Reserved] 7/				
43-3	[Reserved] 7/				