JUL 25 1985

MEMORANDUM

SUBJECT: Addendum to the Ecological Effects Branch's Chapter and Data Table for the Lindane Standard.

THRU: Harry Craven, Head-Section 4
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

THRU: Michael Slimak, Chief
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

TO: George LaRocca, PM-15
Insecticide-Rodenticide Branch
Registration Division (TS-767-C)

EEB wants to replace the Precautionary Labeling Statement for seed treatment on page 9 of our Disciplinary Review with the following statement already present on seed treatment products:

> "This product is toxic to fish, birds, and wildlife. Do not apply directly to lakes, streams, or ponds. Do not contaminate water by cleaning of equipment or disposal of wastes. Exposed treated seeds may be hazardous to birds and other wildlife. Dispose of all excess treated seeds by burial away from bodies of waters."

EEB also wants to amend the hazard assessment for seed treatments and to add a new avian dietary LC_{50} data requirement. Our original assessment stated that there was less likelihood that an avian hazard will be realized from exposure to treated seeds similar in size to soybean seeds which are smaller than corn seeds.

We had assumed it was unlikely that a bird would consume 30 treated soybean seeds in a field whereas a bird could easily consume 9 treated corn seeds to ingest a lethal dose of lindane.

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However, a more extensive analysis indicates we may have underestimated the potential hazards. Necropsies of birds caught in agricultural fields revealed that their crops were full of seeds. Therefore a bird could theoretically ingest 30 treated seeds (R. Balcomb, pers. comm.).

In order to verify if seeds treated with lindane are toxic to birds, we want to request an additional set of avian dietary LC_{50} studies with both passerine birds and bobwhite quail as the test species. These studies would consist of exposing the test birds to a straight diet of only treated seeds in one test and exposing them to a choice diet of treated and untreated seeds in a second test. These studies would enable us to quantify the toxicity of treated seeds to birds. (These tests have been done for other seed treatment pesticides.)

If the data from these studies indicate that treated seeds present a significant hazard, then more precautions beyond the present label statement will be necessary.

Harry Craven and I met with John Jordan of EAB to discuss the possibility that EEB may need the data from several environmental chemistry studies which EAB is not requiring. However, it is our belief that we do not need any additional environmental fate data as the aquatic residue monitoring study, including a spray drift study, should provide sufficient data to address our concerns about the levels of lindane entering aquatic ecosystems.

Finally, our hazard assessment stated that the use of lindane on pecans can produce residues in aquatic ecosystems greater than 1/2 the LC_{50} values of fish and aquatic invertebrates, thereby exceeding an RPAR risk criterion. However, we do not believe this warrants a special review as we do not have good exposure data. We need the exposure data which will be provided by the environmental fate data and the aquatic residue monitoring and spray drift studies in order to determine if this RPAR risk criterion is achieved under actual use.

Attached are the revised data tables listing the additional avian dietary studies and changes in our footnotes.

/s/

Ann Stavola, Aquatic Biologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

Attachment

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Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement?	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B) ?	Time Frame For Data 3/ Submission
§158.145 Wildlife and Aquatic Organisms						
AVIAN AND MAMMALIAN TESTING						
70-1 - Special Test	TEP	A	No	-	Reserved 4/	
71-1 - Acute Avian Oral Toxicity	TGAI	A,G	Partially	00020560**	Yes 5/	9 Months
	TEP	A	Partially	HQ0STA01** need copy of document	~~Yes 4/~~	~~9 Months~~
71-2 - Avian Subacute Dietary Toxicity						
- Upland Game Bird, and	TGAI	A,G	Yes	00022923*	No	
- Waterfowl	TGAI	A,G	Yes	00022923*	No	
71-3 - Wild Mammal Toxicity	TGAI	A,G	No	-	No	
71-4 - Avian Reproduction	TGAI					
- Upland Game Bird, and	TGAI	A	No	-	Reserved 7/	
- Waterfowl	TGAI	A	No	-	Reserved 7/	
71-5 - Simulated Field Testing - Mammals, and	TEP	A	No	-	Reserved 7/	
- Birds	TEP	A	No	-	Reserved 7/	
71-5 - Actual Field Testing - Mammals, and	TEP	A	No	-	Reserved 7/	
- Birds	TEP	A	No	-	Reserved 7/	
-> - Upland Game Bird	TEP	A	No	-	YES 6/	9 months
- Passerine Bird	TEP	A	No	-	yes 6/	9 months

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GENERIC DATA REQUIREMENTS FOR LINDANE

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement?	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B) ?	Time Frame For Data 3/ Submission
§158.145 Wildlife and Aquatic Organisms (Continued)						
AQUATIC ORGANISM TESTING						
70-1 - Special Test	TEP	A	No	-	Yes 9/	12 Months
72-1 Freshwater Fish Toxicity						
- Coldwater Fish Species	TGAI	A,G	Yes	00003503*	No	
	TEP	A	No	-	Yes 9/	9 Months
- Warmwater Fish Species	TGAI	A,G	Yes	00003503*	No	
	TEP	A	No	-	Yes 9/	9 Months
72-2 - Acute Toxicity to Freshwater Invertebrates	TGAI	A,G	Yes	00097842** 05017538** 00003503*	No	
	TEP	A	No	-	Yes 9/	9 Months
72-3 - Acute Toxicity to Estuarine and Marine Organisms						
- Fish	TGAI	A	No	-	No	
- Mollusk	TGAI	A	No	-	Yes 9/	12 Months
- Shrimp	TGAI	A	No	-	No	

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement?	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B) ?	Time Frame For Data Submission 3/
§158.145 Wildlife and Aquatic Organisms (Continued)						
AQUATIC ORGANISM TESTING (Continued)						
72-4 - Fish Early Life Stage	TGAI ~~TAGI~~	A	No	–	No	
- Estuarine	~~TAGI~~ TGAI	A	No	–	Yes 11/	15 Months
- Freshwater						
- Aquatic Invertebrate Life-Cycle	TGAI ~~TAGI~~	A	No	–	No	
- Estuarine	TGAI ~~TAGI~~	A	No	–	Yes 11/	15 Months
- Freshwater	TGAI	A	No	–	Reserved 7/	
72-5 - Fish - Life-Cycle						
72-6 - Aquatic Organism Accumulation						
- Crustacean	TGAI	A	No	–	Reserved 7/	
- Fish	TAGI	A	No	–	Reserved 7/	
- Insect Nymph	TGAI	A	No	–	Reserved 7/	
- Mollusk	TGAI	A	No	–	Reserved 7/	
72-7 - Simulated Field Testing -Aquatic Organisms	TEP	A	No	–	Reserved 7/	
- Actual Field Testing - Aquatic Organisms	TEP	A	No	–	Reserved 7/	

§158.145 Wildlife and Aquatic Organisms (Continued)

1/ Composition: TGAI = Technical Grade of the Active Ingredient; PAI = Pure 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 = Aqautic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor

3/ Data must be submitted within the indicated time frame, based on the date of the Guidance Document.

4/ Residue monitoring of avian food items may be needed to determine if there should be further restrictions to reduce exposure of birds to lindane in pecan orchards. The residues on vegetation and insects theoretically exceeded the criterion.

5/ The bobwhite quail should be the test species for the avian single-dose oral LD_{50} studies.

7/ ending results of environmental fate data and lower tier studies.

~~8/ Aquatic residue monitoring is needed to determine if aquatic organisms are exposed to lindane used in pecan orchards.~~

9/ Testing with a TEP is required when the LC_{50} of the technical grade is equal to or less than the EEC in the aquatic environment (such as for pecans and soil and foliar applications on crops).

10/ The result from the acute toxicity test with mollusks is used to determine lindane's risk to endangered mollusks from the pecan use.

11/ Based on LC_{50} values less than 1 mg/l and EEC greater than 0.01 of any LC_{50}.

* This study alone fulfills the data requirement.

** This study alone does not fulfill the data requirement.

8/ Aquatic residue monitoring is needed to determine if aquatic organisms are exposed to lindane used in pecan orchards. This monitoring study must include a spray drift study in order to determine the proportions of lindane residues entering the aquatic ecosystem from spray drift and from runoff. The registrant must submitted a protocol ~~prior to conduction~~ for approval prior to conducting this study. Refer to 40 CFR Part 158.142 for the spray drift data requirements.

6/ An additional set of avian dietary studies are needed to determine if birds will ingest lethal amounts of lindane when they consume treated seeds. The test species should be the bobwhite quail and the red-winged blackbird. ~~The~~ In one test the birds would be exposed on to a straight diet of only treated seeds and in a companion test they would be exposed to a choice of treated and untreated seeds. The registrant must submit a protocol for approval prior to conducting this study.