10/[redacted]/88

DATA EVALUATION RECORD

CASE: GS0100 Chlorpyrifos FRSTR page 1 of 4

CONT-CAT: 01 GUIDELINES 72-4

MRID: RIOCHP05
Jarvinen, A.W., Tanner, D.K., 1982, Toxicity of Selected Controlled Release and Corresponding Unformulated Technical Grade Pesticides to the Fathead Minnow (Pimephales promelas) Environmental Pollution (Series A) 27:179-195

REVIEW RESULTS: VALID X INVLAID _____ INCOMPLETE _____

GUIDELINES:
SATISFIED _____ PARTIALLY SATISFIED _____ NOT SATISFIED X

DIRECT REVIEW TIME 1 HOURS
START DATE:9/1/88 END DATE:9/30/88

REVIEWED BY: Daniel Rieder
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from References all supplementary No raw data

4 Day Flowthrough Acute and

32 Day Embryo-larvae Studies under same MRID

R10CHP05

DATA EVALUATION RECORD

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R10CHP05

1. Chemical: Chlorpyrifos

2. Test Material: Dursban (tech); Dursban 10 CR (10 percent ai)

3. Study Type: 32-day Embryo Larvae and Flow-through 4-day LC_{50} on Fathead Minnow.

4. Study ID: Jarvinen, A.W., Tanner, D.K. 1982. Toxicity of Selected Controlled Release and Corresponding Unformulated Technical Grade Pesticides to the Fathead Minnow Pimephales promelas. Environmental Pollution (Series A) 27 (1982), 179-195.

5. Reviewed by: Miachel Rexrode
Fishery Biologist
HED/EEB
Signature: Miachel Rexrode
Date: 4/9/85

6. Approved by: Norm Cook
Section Head
HED/EEB
Signature: Norman Cook
Date: 5.16.85

7. Conclusions:

This study appears to be scientifically sound, but can not be verified for registration at this time. Results were presented in summary form; replicate data were not provided. However, results on Dursban (tech) and Dursban 10 CR suggest that fathead minnow growth and survival were significantly affected. No-effect levels were calculated at >0.0016 to < 0.0032 mg/l and >0.0022 to <0.0048 mg/l, respectively.
↑ tech 10CR

8. Recommendations:

Findings should be verified by EEB. Therefore, raw data (replicate data) must be submitted to this office. With submission and acceptance of the raw data this study might be considered for core status to support the technical and this specific formulation.

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9. Methods and Materials:

Flow-through 4-day acute and 32-day embryo-larval studies were conducted in a mini dilater system similar to one described by Benoit. This system was modified so that both CRP (Controlled Release Pesticide) and the technical grade could be tested simultaneously in duplicate. Experimental fish chambers held a water volume of 500 ml and the flow rate of each chamber was 15 ml min^{-1}, maintaining dissolved oxygen levels at > 75 percent saturation. A 99 percent water replacement occurred in each chamber within 3 hours. A constant 16-hr photoperiod was maintained. Water was obtained from Lake Superior, sterilized with ultraviolet light and maintained at 25 °C. Water chemistry was as follows: dissolved oxygen levels, 6.5 to 8.4 mg/l; total hardness, 45 mg/l alkalinity, 43.1 mg/l; pH, 7.4 to 7.8.

Fathead minnow eggs less than 24-hour old were obtained on spawning tiles from the Environmental Research Laboratory - Duluth Fish Culture Unit. Twenty newly hatched larvae were randomly added to each fish chamber for the 4-day flow-through studies. In 4-day static tests ten newly hatched larvae were randomly placed in beakers of toxicant. In embryo-larval studies fifty eggs were randomly assigned to embryo cups.

10. Reported Results:

Toxicity of technical grade Dursban remained similar with time, with static 96-hr LC_{50} = 0.17 to 0.15 mg/l whereas the encapsulated formulation became less toxic, the 96-hr LC_{50} increasing from 0.13 to 0.28 mg/l. Flow-through 96-hr LC_{50} for Dursban (tech) was 0.14 mg/l and for Dursban 10 CR was 0.12 mg/l.

11. Reviewer's Discussion and Interpretation:

These tests appear to be scientifically sound, but will not support registration at this time. Data cannot be verified by EEB since results are presented in summary form.

However, results of Dursban (tech) and Dursban 10 CR 32-day embryo-larval studies suggested that growth and survival were significantly affected. A "no effect" level for the technical was calculated at 0.0016 to 0.0032 mg/l and for the encapsulated formulation was 0.0022 to 0.0048 mg/l. Unquantifiable behavioral (lethargy) changes were noted, at lower concentrations.

12. Category: Supplemental. Possibly upgradable to core for technical material and this specific formulation.