D-7915 /LINURON SR ~~UNDATED~~ 11-25-85

DATA EVALUATION RECORD

Releasable

1. Chemical: Linuron

2. Test Material: 95.8% active ingredient

3. Study Type: Acute Toxicity Study on a Warmwater Fish Species
   Species Tested: Bluegill sunfish (Lepomis macrochirus)

4. Study ID: Hall, C. (August 1985) 96-Hour Lc_{50} (Bluegill) - Linuron Report No. 101-85, Prepared by Haskell Laboratory for Toxicology and Industrial Medicine, Newark DE. Submitted to E.I. du Pont de Nemours and Co., Inc., Wilmington, DE EPA Accession No. 259206.

5. Reviewed by: Elizabeth E. Zucker, Wildlife Biologist, EEB/HED — Signature: — Date:

6. Approved by: Douglas Urban, Acting Supervisory Biologist, EEB/HED — Signature: — Date:

7. Conclusions:

This study relating the acute toxicity of technical linuron to bluegill sunfish may not be used to fulfill a guidelines requirement for a 96-hour LC_{50} test on a warmwater fish species. The test material was insoluble at all concentrations utilized, thus fish may not have been exposed to nominally designated concentrations. A reliable LC_{50} cannot be derived.

8. Recommendations:

N/A

9. Background:

This study was submitted in response to guideline requirements developed by the Registration Standard for Linuron.

10. Discussion of Individual Study:

N/A

4 pages.

11. Materials and Methods:

a. Test Procedures - Fish were obtained from Sea Plantation, Inc., Salem, MA, and held in the laboratory for 96 days prior to testing. Definitive test specifics of note include:

Fish size: Mean standard length - 3.8 cm
Mean wet weight - 1.14 g
Diluent - Laboratory well water of 76 mg/L $CaCO_3$ alkalinity and 65 mL/L $CaCO_3$ hardness
Vessels - glass, rectangular 21 liter aquaria containing 15 liters diluent
Solvent - DMF (0.07 mL/L maximum)
Ten fish per vessel
Fish not fed 48 hours prior to testing
Temperature - 21.8 to 22 °C
D.O. and pH were measured in low, medium, and high concentrations at beginning of the test and every 48 hours
Mortality counts were made daily

b. Statistical Analysis - The probit method of Finney (1971) was utilized to calculate an LC_{50}.

12. Reported Results:

Mortality Data

Conc. (mg/L)	% Dead 24 hrs	48 hrs	72 hrs	96 hrs
7	0	10	30	100
5	0	0	0	40
3	0	0	0	0
2	0	0	0	0
1	0	0	0	0
0.5	0	0	0	0
Control	0	0	0	0
Solvent	0	0	0	0

D.O. ranged from 5.3 to 9.0.
pH ranged from 7.0 to 7.2.

A filmy substance occurred on the surface and sides of vessels at all levels.

At concentrations of 5 mg/L and greater, fish exhibited the following signs of toxicity: discoloration, lying on the bottom, lethargy, erratic swimming, gasping, loss of equilibrium and swimming at surface.

13. Study Author's Conclusions:

The 96-hour LC_{50} was reported to be 5.11 mg/L.

14. Reviewer's Evaluation and Interpretation of the Study:

a. Test Procedures - This study was performed under conditions that generally comply with current testing standards with the notable exception that a precipitate formed in all the concentrations tested.

b. Statistical Analysis - Results of Stephan's computerized program are appended

c. Results/Dicussions: Test material was insoluble at the concentration utilized for the study. Fish may not have been exposed to nominally designated concentrations.

d. Adequacy of Study:

1. Classification: Invalid

2. Rationale: Test material was insoluble at all concentrations. A reliable LC_{50} cannot be derived from nominally designated dosage levels.

3. Repairability: The registrant would have to determine actual exposure concentrations.

LINURON 96 HOUR LC50 BLUEGILL

****

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
7	10	10	100	.0976563
5	10	4	40	37.6953
3	10	0	0	.0976563
2	10	0	0	.0976563
1	10	0	0	.0976563
.5	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 3 AND 7 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 5.21795

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

****