

US EPA ARCHIVE DOCUMENT



CASE GS0140

ALDICARB

PM

9/29/82

CHEM 098301

BRANCH EEB DISC TOPIC Special Order

FORMULATION 04 Granular

FICHE/MASTER ID 00080707 CONTENT CAT 01

Knott, W.; Bellies, R.P. (1966) UC-21149: Acute Toxicity in Sunfish. (Unpublished study received Mar 2, 1967 under 7F0573; prepared by Woodard Research Corp., submitted by Union Carbide Corp., Charleston, W.Va.; CDL:090072-P)

SUBST. CLASS S

OTHER SUBJECT DESCRIPTORS

PRIM:

SECI

DIRECT RVN TIME (MM) START-DATE END DATE

REVIEWED BY: RICHARD R. STEVENS
TITLE: ECOLOGIST
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DATE: 9/29/82

APPROVED BY:
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DATA EVALUATION RECORD

CHEMICAL: Aldicarb, 10% G

CITATION: Knott, W., Beliles, R.P. (1966) UC-21149; Acute Toxicity in Sunfish. (Unpublished study received March 2, 1967 under 7F0573; prepared by Woodard Research Corp., submitted by Union Carbide Corp., Charleston, W.Vs., CDL:090072-P) (00080707).

REVIEWED BY: Richard R. Stevens
Ecologist, EEB/HED
March 22, 1984

STUDY TYPE: Aquatic Acute Toxicity
Bluegill (Lepomis macrochirus)

RESULTS: The 96-hour LC₅₀ is 1.45 (1.24 - 1.69) ppm.

CONCLUSIONS: This study is sufficient to demonstrate that aldicarb 10 G is moderately toxic to bluegill. It does not satisfy requirements for testing the technical of the active ingredient.

Materials/Methods

Test Procedures

"Bluegill sunfish (Lepomis macrochirus) were collected locally and held for a minimum acclimation period of ten days. During the acclimation period the fish were fed Purina Trout Chow daily. After the acclimation period, 140 fish were selected to give a population uniform in size and held 72 hours without food in deionized water which was reconstituted by adding CaSO₄ (30 mg/l), MgSO₄ (30 mg/l), NaHCO₃ (48 mg/l), and KCl (3 mg/l).

"These toxicity tests were conducted in glass jars containing 15 liters of reconstituted water which was oxygenated prior to the addition of the toxicants and fish. [Aldicarb] 10% and DDT (77.2%) were used, with the DDT being a positive control. Fresh stock solutions were prepared each day the tests were started. The DDT was dissolved in acetone and the aliquots required to attain the desired concentrations were pipetted into the test jars. The selected amounts of [Aldicarb] 10% were placed directly into the test jars.

"Only five fish were placed in each jar (15 liters of water). The mean weight of the fish used was about 1.5 grams and the mean length was about 4.2 cm (N=15). The water temperature remained at 72°F during the course of the experiment."

Statistical Procedures

The data were examined by the method of Litchfield and Wilcoxon (1949).

Reported Results

The fish were observed frequently over the course of the experiment, and deaths during each 24-hour period were as follows:

Compound	Concentration ppm	Cumulative Mortality			
		24 hours	48 hours	72 hours	96 hours
Control	-	0/10	0/10	0/10	0/10
Control	(Acetone-5 ppt)	0/10	0/10	0/10	0/10
Aldicarb 10%	32	10/10	10/10	10/10	10/10
Aldicarb 10%	18	10/10	10/10	10/10	10/10
Aldicarb 10%	10	10/10	10/10	10/10	10/10
Aldicarb 10%	5.6	10/10	10/10	10/10	10/10
Aldicarb 10%	3.2	10/10	10/10	10/10	10/10
Aldicarb 10%	1.8	3/10	6/10	6/10	7/10
Aldicarb 10%	1.0	0/10	0/10	0/10	1/10
Aldicarb 10%	0.56	0/10	0/10	0/10	0/10
DDT 77.2%	0.0122	10/10	10/10	10/10	10/10
DDT 77.2%	0.0069	1/10	6/10	6/10	6/10
DDT 77.2%	0.0039	0/10	2/10	3/10	5/10
DDT 77.2%	0.0022	0/10	0/10	0/10	0/10

The 96-hour LC₅₀ values for aldicarb 10 G and DDT are 1.45 (1.24 - 1.69) and 0.0056 (0.0035 - 0.0087) ppm, respectively.

"Within one hour after the start of the exposure signs of intoxication were seen at levels of 32, 18, 10, 5.6 and 3.2 ppm of [Aldicarb] 10%. Toxic signs consisted of loss of equilibrium followed by death. All dead fish floated to the surface of the containers. It was noted that the granules of [Aldicarb] 10% settled to the bottom of each aquaria. DDT exposure at 0.0122 and 0.0069 ppm resulted in loss of equilibrium."

Reviewers Evaluation

Validation Category: Supplemental

Category Rationale: This study was not conducted with technical aldicarb. This study is acceptable for testing the formulated product. Statistical verification of the data confirmed the authors LC₅₀ findings.