

US EPA ARCHIVE DOCUMENT



4-2-84

(TDR03B)

DATA EVALUATION RECORD

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CASE ALDICARB PM 1/20/84

CHEM 098301

BRANCH EEB DISC TOPIC

FORMULATION 00 Active Ingredient

FICHE/MASTER ID BOWOAL07 CONTENT CAT 01

Pickering, O.H. and W.T. Gilliam. 1982. Toxicity of aldicarb and fonofos to the early-life stage of fathead minnow, Archives of Experimental Contam. and Toxicol. 11:699-702.

SUBST. CLASS =

OTHER SUBJECT DESCRIPTORS

PRIM:
SEC:

DIRECT REVIEW TIME = (MH) START DATE END DATE

REVIEWED BY: Charles Bowen II
TITLE: Fishery Biologist
ORG: EEB
LOC/TEL:

SIGNATURE: *Charles Bowen II*

DATE: 4/2/84

REVIEWED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE:

DATE:

Chemical: Aldicarb

Formulation: Technical (99% A.I.)

Citation: Pickering, O.H. and Gilliam, W.T. 1982. Toxicity of Aldicarb and fonofos to the Early-Life stage of fathead minnow, Archives of Experimental Contamination and Toxicology. Vol. 11, 699-702p. (BOWDALO7).

Reviewed By: Charles A. Bowen II

Title: Fisheries Biologist

ORG: Ecological Effects Branch (EEB)

Test Type: 96-hour static freshwater bioassay

A. Species - fathead minnow (Pimephales promelas)

Reported Results:

95% C.L.

96-hour LC₅₀ = 1.37 ppm (1.169 - 1.730 ppm)

No Effect Level = .200 ppm

Reviewer's Conclusions:

This bioassay is scientifically sound and demonstrates that aldicarb is moderately toxic to warm water fish. This study will fulfill the requirements for a 96-hour warmwater fish bioassay.

Methods and Materials:

Acute Toxicity: The ELS diluter system with similar dilution water was used for a flow-through aldicarb acute exposure using methods recommended by U.S. EPA (1975)**. The high nominal concentration was 3,200 ug/L, with a 0.5 dilution factor. Ten juveniles (mean wt. 0.92g) were used in each duplicate exposure chamber. Fish were exposed at 22 ± 1°C for four days with samples for aldicarb analysis being taken initially and on the fourth day. The deviation from the mean of these two sets of analysis was <5%, so the mean values were used in the LC₅₀ calculation. At 96-hr, the exposure to the pesticide dosing was stopped, and the fish were exposed to dilution water only for an additional seven days. The LC₅₀ values and 95% confidence limits were determined by probit analysis (Finney 1971).

Authors Results:

Table 1. Percentage survival of fathead minnows actually exposed to aldicarb

Concentration of aldicarb (ug/L)		Percentage survival		
Nominal	Measured	24 hr	48 hr	96 hr
3,200	2,900	55	45	5
1,600	1,400	90	90	55
800	830	95	95	85
400	360	100	100	95
200	220	100	100	100
Control	Control	100	100	100

The 96-hr LC₅₀ of aldicarb was 1,480 (1,170-1,890) ug/L based on nominal concentrations, and 1,370 (1,169-1,730) ug/L based on measured concentrations. Because several fish in different concentrations of aldicarb had lost equilibrium by 96-hr exposure, the test was continued for an additional seven days without the addition of aldicarb. During four days post-exposure, there was some delayed mortality, but all surviving fish had recovered their equilibrium. There was no additional mortality during the last three days of clean water exposure. This LC₅₀ value based on measured concentrations for the four day aldicarb exposure was 1,200 (980-1,500) ug/L.

Footnote

**U.S. Environmental Protection Agency: Methods for acute toxicity tests with fish, macroinvertebrates, and amphibians. Ecol. Res. Series EPA-600/3-75-009 National Environmental Research Center, Corvallis OR (1975).

Reviewer's Conclusions:

The conclusions drawn by the author are supported by dose response mortality data. No deviations from EPA's current guidelines for static freshwater bioassays were noted:

Validation Status: Core

Category Repairability: N.A.