5-4-87

TDMS DATA EVALUATION RECORD PAGE 1 OF

CASE GS ___ _____ PM ___ ___/___/___

CHEM Diazinon _____

BRANCH EEB DISC ___

FORMULATION technical, 92.5% ai diazinon

FICHE/MASTER ID RO0DI007

CITATION: Allison, D.T.; Hermanutz, D.T. (1977) Toxicity of diazinon to Brook Trout and Fathead Minnows. U.S. EPA Environmental Research laboratory-Duluth, Office of Research and Development, Duluth, Minnesota, EPA-600/3-77-060.

SUBST. CLASS=

OTHER SUBJECT DESCRIPTORS
PRIM:

DIRECT REVIEW TIME= 1 week (MH) START DATE May 1986 END DATE May 1986

REVIEWED BY: Margaret Rostker
TITLE: Wildlife Biologist
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H. T. Craven 5/4/87

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APPROVED BY: Harry Craven
TITLE: Supervisory Biologist
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Harry Craven 5/4/87

SIGNATURE:

1/4

DATA EVALUATION RECORD

1. Chemical: Diazinon

2. Test Material: Technical diazinon (92.5% ai).

3. Study Type: Chronic toxicity to Brook Trout and Fathead Minnows.

4. Study ID: Allison, D.T.; Hermanutz, R.O. (1977) Toxicity of diazinon to Brook Trout and Fathead Minnows. U.S. EPA, Environmental Research Laboratory-Duluth, Office of Research and Development, Duluth, Minnesota. EPA-600/3-77-060.

5. Reviewed by: Margaret Rostker, Wildlife Biologist, EEB/HED — Signature: H.T. Craven — Date: 5/4/87

6. Approved by: Harry Craven, Supervisory Biologist, EEB/HED — Signature: — Date: H.T. Craven 5/4/87

7. Conclusions:

Flow-through 96-hour LC_{50} = 7.8 mg/L (ppm) for Fathead minnow; 1.6 mg/L for Flagfish; 0.77 mg/L for Brook Trout, and 0.46 mg/L for Bluegill Sunfish.

The study is sound and results are useful in hazard assessment. The study is classified as core.

8. Recommendations: N/A

9. Background: N/A

10. Discussion of Individual Test: N/A

11. Materials and Methods:

a. Test Animals: All fish were obtained from laboratory stock or commercial hatcheries.

b. Dose: All tests were flow-through; proportional diluters delivered five dose concentrations plus control water to duplicate exposure chambers in all tests.

c. Design: 96-hour LC_{50} Tests: Fathead minnows: 20 fish/concentration; five concentrations. 1-1, 2.1, 3.4, 6.0, 11.7 ppm (mg/L); Bluegill Sunfish: 20 fish/concentration; five concentrations: 0.04, 0.08, 0.22, 0.44, 0.89 ppm (mg/L); Brook Trout: 20 fish/concentration: five concentrations: 0.04, 0.08, 0.16, 0.39, 0.92 ppm (mg/L); Flagfish: 40 fish/concentration; five concentrations: 0.2, 0.36, 0.82, 1.6, 3.1 ppm (mg/L).

Chronic Test: Fathead Minnows: 50 fish/concentration: five concentrations: 69, 118, 229, 511, 1099 ug/L (ppb); Brook Trout: 6 fish/concentration; five concentrations: 0.55, 1.1, 2.4, 4.8, 9.6 ug/L (ppb).

d. Statistics: 96-hour LC_{50}'s calculated with methods described by Litchfield and Wilcoxon. Chronic tests analysed with one-way analysis of variance and Dunnett's comparison of means.

12. Reported Results:

Average 96-hour LC_{50}'s for diazinon under flow-through conditions were 7.8, 1.6, 0.77, and 0.46 mg/L, respectively, for fathead minnos, flagfish, brook trout, and bluegills.

The chronic effects of diazinon on fathead minnows and brook trout were determined in flow-through systems with constant toxicant concentrations. Fathead minnows exposed to the lowest concentration tested (3.2 ug/L) from 5 days after hatch through spawning had a significantly higher incidence of scoliosis than the control ($P = 0.05$). Hatch of their progency was reduced by 30 percent at this concentration. Yearling brook trout exposed to 4.8 ug/L and above began developing scoliosis and lordosis within a few weeks. Growth of brook trout was substantially inhibited during the first 3 months at 4.8 ug/L and above. Neurological symptoms were evident in brook trout at 2.4 ug/L and above early in the tests, but were rarely observed after 4 or 5 months of exposure. Exposure of mature brook trout for 6 to 8 months to concentrations ranging from 9.6 ug/L to the

lowest tested (0.55 ug/L) resulted in equally reduced growth rates for their progency. Transfer of progeny between concentrations indicated that effects noted for porgeny of both species at lower concentrations were the result of parental exposure alone and not the exposure of progeny following fetilization.

13. Study Author's Conclusions/QA Measures:

See Reported Results.

14. Reviewer's Discussion and Interpretation of Study:

a. Test Procedures: The procedures were in general conformance with guidelines.

b. Statistical Analysis: The analysis was appropriate.

c. Discussion/Results: See Reported Results.

d. Adequacy of Study:

1. Classification: Core. Should be Supplemental

2. Rationale: Guidelines.

3. Repair: N/A.

No NOEC or LOEC determined

B. Montague

Brook Trout LOEC 8 months less than 0.55 ug/L for B. Trout growth effects

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