DATA EVALUATION REPORT
ECOLOGICAL EFFECTS BRANCH

1. Chemical: Propetamphos

2. Test Material: Propetamphos technical, 90% purity
Lot No. 7-19389, received 5/3/90.

3. Study Type: 96-hour Acute Flow-through LC_{50} with
Rainbow trout.

4. Study Identification:
Study Author: Bowman, Jane
Study Laboratory: Analytical Biochemistry Laboratories,Inc.
Study Dates: June 7-11, 1990
Study Identification: Report No. 38675
Sponsor: Zoecon Corporation, Dallas, Texas
EPA Identification: MRID 416074-15

5. Reviewed by: Brian Montague, Fisheries Biologist
Ecological Effects Branch
Environmental Fate and Effects Division

Brian Montague 1/9/91

6. Approved by: Les Touart, Acting Section Head
Ecological Effects Branch
Environmental Fate and Effects Division(H7507C)

L. T 1/14/91

7. Conclusions: The study has shown propetamphos technical to be moderately toxic to rainbow trout under flow-through conditions. The reported 96-hour LC_{50} is 2.6 mg/L (2.3 - 3.0 mg/L). The NOEL for 96-hours is 0.37 mg/L.

8. Recommendations: N/A

9. Submission Purpose: Submitted in response to reregistration guideline requirements.

10. Study Protocol and Methodology: Protocol based on EPA Standard Testing Procedures. The Lab's standard protocol number is 8007-SEP.

Test Organisms: Rainbow trout eggs were originally obtained from Mt Lassen Trout Farms in Red Bluff, California and identified as Lot No. 890. The eggs were fertilized at the laboratory and maintained in well water. Hatchlings were fed brine shrimp and trout chow (Ziegler Bros. Inc.) and later placed in chilled, closed system, holding tanks for a four-week acclimation period. Seventy-two hours before initiation the young fish were placed in another acclimation unit and held without food. Measurements of control fish yielded a mean weight of 1.33 $\pm$0.21g and a mean length of 47 $\pm$2mm.

Test Solution Preparation: A diluter stock solution of 80,000 mg/L was prepared by dissolving 22.222 gms of Propetamphos technical in 250 ml of dimethylformamide (DMF). The injector syringe on the Mount and Brungs style diluter was set to deliver 0.1 ml of stock solution per two liters of dilution water yielding the highest concentration level of 4.0 mg/L which was diluted to other concentrations of 2.0, 1.0, 0.50 and 0.25 mg/L. The solvent control received 0.05 ml of DMF, equivalent to the solvent aliquot used at 4.0 mg/L.

Test Materials and Procedures: Twenty fish were used for each of the seven 30-liter glass test vessels. A flow rate of 203 liters per day was maintained thus providing 6.8 daily volume replacement per test vessel. Load factor is estimated to have been approximately 0.17 gm/liter/day. The aquaria were immersed in a water bath which maintained a constant temperature of 12 $\pm$1°C. After the 72 hours of acclimation fish were randomly placed in test vessels that had been on the diluter system for 44 hours.

13. Reported Test Results: Prior to the definitive test initial range testing at 0.1, 0.5, and 2.0 mg/L concentrations had produced 100% mortality at 2.0 mg/L, but no mortality at the lower concentrations. A later test produced only 80% mortality at 4.0 mg/L.

The definitive test results produced 90% mortality after 96 hours at the highest measured concentration of 3.7 mg ai/L. Only one mortality occurred at the next lowest measured concentration of 1.7 mg/L. Effects noted at these concentrations and also at 0.88 mg ai/L included bottom resting, erratic swimming, darkening, twitching, loss of equilibrium and labored respiration. No effects were noted in the 0.37, 0.21, solvent control, or control test fish. Though effects were noted in the three higher concentrations

after 24 hours only one mortality occurred (3.7 mg/L concentration).

Temperature remained stable at 12°C, dissolved oxygen ranged from 8.6 to 9.0 mg/L, and pH was stable at approximately 7.9 (7.8 - 8.0). These water quality parameters were measured every 48 hours. The mean measured concentrations were 85 ±7% of the nominal concentrations and analysis was via gas liquid chromatography. The 96-hour measured concentration for the 4.0 mg/L nominal concentration was actually 3.2 mg/L.

12. **Study Author's Conclusions:** "From the data collected during this study the 24-, 48-, 72-, and 96-hour LC_{50} values for rainbow trout exposed to Propetamphos were >3.7, 3.0 and 2.6 mg/L based on average measured concentrations..... Given these behavioral/sublethal effects at the test concentrations of 0.88, 1.7, and 3.7 mg/L, a no-effects concentration of Propetamphos Technical toxicity to rainbow trout was determined to be 0.37 mg/L."

13. **Reviewer's Discussion:** The study appears to have been conducted in accordance with Agency guideline requirements for acute toxicity testing with a coldwater fish species. A slightly lower LC_{50} value would be obtained if based on measured concentrations reported from the 96-hour samples. However, the range would still be in the moderately toxic category and within the confidence limits obtained by the laboratory.

Adequacy of Study

Classification: Core
Rationale: Results support the study author's conclusions.
Repairability: N/A