DATA EVALUATION RECORD

1. <u>Chemical</u>: PP 321

2. <u>Test Material</u>: PP 321, 98% ai

3. <u>Study/Action Type</u>:   Fish 96-hr Acute Study – Continuous Flow
   Rainbow Trout

4. <u>Study ID</u>: PP 321: Determination of acute toxicity
   to rainbow trout (<u>Salmo gairdneri</u>), R.W. Hill,
   ICI, August 1984, <u>EPA Accession No. 259807.</u>

5. <u>Reviewed By</u>:   Ann Stavola   Signature: *Ann Stavola*
   Aquatic Biologist
   EEB/HED   Date: *Sept 3, 1986*

6. <u>Approved By</u>:   Doug Urban   Signature: *Douglas J Urban*
   Supervisory Biologist
   EEB/HED   Date: *9/12/86*

7. <u>Conclusions</u>:

   The study is scientifically sound and meets EPA
   Guidelines requirement for acute toxicity testing with
   coldwater fish. With an 96-hr LC_{50} value of 0.24 (0.08-
   0.70) ug/L technical PP 321 is very highly toxic to
   coldwater fish.

8. <u>Recommendations</u>: N/A.

9. <u>Background</u>:

   This study was submitted to suppport the application
   for an EUP for Karate 1 EC Insecticide.

10. Materials and Methods:

a. **Test Animals:** Rainbow trout (Salmo gairdneri)
   obtained brood stock:

   Weight = 0.83 g, range = 0.30 to 1.48 g.
   Length = 38.3 mm, range = 29 to 48 mm.

b. **Dosage:** PP 321, 98% ai. Stock concentrations made
   with acetone and deionized water. Dilution water -
   hardness = 72.4 ppm $CaCO_3$ and conductivity = 165.
   Continuous flowthrough system with a renewal rate of
   200 mL/min and 95 percent exchange of test solutions
   within 4.5 hours. Concentrations were measured by GC.

c. **Study Design:** The test was conducted in 20 L glass
   vessels. The measured concentrations were: fw control,
   solvent control, 0.03, 0.07, 0.11, 0.21, 0.37, and
   0.63 ug PP 321/L. There were 20 fish per concentration.
   The fish were acclimatized in the test vessels for 2 days
   at the test temperature of 12 °C prior to the initiation
   of the test.

d. **Statistical Analysis:** The data were analyzed with
   Finney's probit analysis.

11. Report Results:

Nominal Conc. (ug/L)	Measured Conc. (ug/L)	% Mortality			
		24h	48h	72h	96h
1.0	0.63	80	100	100	100
0.56	0.37	5	35	90	100
0.32	0.21	0	0	5	100
0.18	0.11	0	0	0	0
0.10	0.07	0	0	0	0
0.056	0.03	0	0	0	0
Acetone Control	–	0	0	0	0
FW Control	–	0	0	0	0

Time	LC_{50} (ug/L)	95% ci (Based on measured concentrations)
24h	0.52	(0.46-0.60)
48h	0.40	(0.35-0.45)
72h	0.27	(0.09-0.80)
96h	0.24	(0.08-0.70)

DO levels ranged from 10.2 to 11.2 mg/L in the fish exposure vessels. The pH values ranged from 7.7 to 7.9 in the exposure vessels.

The general symptoms of toxicity in the fish exposed to PP 321 were loss of equilibrium, quiescence, darkening in color, spiraling and rapid respiration rates. These symptoms generally occurred more frequently in fish exposed to 0.21 ug/L and greater.

12. Study Author's Conclusions/QA Measures:

The 96-hr LC_{50} for PP 321 to rainbow trout is 0.24 (0.08-0.70) ug/L. The study followed Good Laboratory Practices.

13. Reviewer's Discussion:

a. Test Procedure: The protocol used in this study basically follows Methods for Acute Toxicity Tests With Fish, Macroinvertebrates and Amphibians, EPA-660/3-75-009.

b. Statistical Analysis: The data were analyzed using EEB's "Aquatox Program." The 96-hr LC_{50} value was computed to be 0.24 (0.20-0.29) ug/L with the moving average method.

c. Discussion/Results: The data indicate that PP 321 is very highly toxic to coldwater fish.

d. Conclusions:

1. Category: Core.

2. Rationale: The study is scientifically sound and meets EPA Guidelines requirement for acute toxicity testing with coldwater fish.

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STAVOLA   PP321   RAINBOW TROUT ACUTE 96 HR
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CONC.     NUMBER          NUMBER          PERCENT         BINOMIAL
          EXPOSED         DEAD            DEAD            PROB.(PERCENT)
  .63       20              20              100           9.536742E-05
  .37       20              20              100           9.536742E-05
  .21       20               2               10           2.012253E-02
  .11       20               0                0           9.536742E-05
  .07       20               1                5           2.002716E-03
  .03       20               0                0           9.536742E-05
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THE BINOMIAL TEST SHOWS THAT .21 AND .37 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 .2621484


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RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
SPAN          G          LC50           95 PERCENT CONFIDENCE LIMITS
  4        .0575314      .2374066        .1986414        .2878057
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RESULTS CALCULATED USING THE PROBIT METHOD
ITERATIONS              G                    H
GOODNESS OF FIT PROBABILITY
    9                6.910711       26.01412                    0
A PROBABILITY OF 0 MEANS THAT IT IS LESS THAN 0.001.
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SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

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SLOPE    =                  6.052215
95 PERCENT CONFIDENCE LIMITS =-9.857986     AND     21.96242

LC50 =      .2439825
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 =      .1504937
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-4-