

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD

1. CHEMICAL: Paclobutrazol

2. FORMULATION: PP 333/Technical; 97% a.i.

3. CITATION: Hill, R.W., B.E. Young, and S.K. Cornish. 1978
Determination of the acute toxicity of PP 333
Rainbow Trout (Salmo gairdneri). Submitted by
ICI Americas, Inc. under Reg. No. 10182-TT,
Acc. No. 248689.

4. REVIEWED BY: John J. Bascietto
Wildlife Biologist
EBB/HED

5. DATE REVIEWED: 1-19-83

6. TEST TYPE: 96-hr LC_{50} - Freshwater Fish
A.) Test Species: Rainbow Trout (Salmo gairdneri)

7. REPORTED RESULTS: LC_{50} values (mg/l; 95% ci) (15°C)

<u>24-hr</u>	<u>48-hr</u>	<u>72-hr</u>	<u>96-hr</u>
36.1	33.6	33.6	33.1*
(33.9-38.5)	(31.8-35.5)	(31.8-35.5)	(31.2-35.1)

(NOEL = 10 mg/l).

* recalculated to 27.8 (26.1-30.0) mg/l

8. REVIEWER'S CONCLUSIONS: The study is scientifically sound, but the
96-hr LC_{50} is reduced slightly for hazard evaluation purpose to
96-hr LC_{50} = 27.8 mg/l. The study fulfills the requirement for a
96-hr LC_{50} on a coldwater fish species. The reduction of the
reported LC_{50} is in accordance with analytical chemistry results
reported. PP 333 is considered "slightly toxic" to Rainbow Trout.

9. Materials/Methods

A. Test procedures: the test was conducted using procedures which were in substantial agreement with the recommendations of the EPA guidelines. Deviations from recommended protocols included:

- aeration of test vessels during exposure.
- daily changes of test solutions during tests.
- use of tap water in test vessels.
- use of DMSO solvent at >2000 ppm (i.e., >9 ml solvent/18l test volume).

B. Statistical Analysis: by Finney probit method.

10. Results

Nominal Conc. tested PP 333, mg/l (ppm)	Percent mortalities*			
	24 Hr.	48 Hr.	72 Hr.	96 Hr.
56.0	100	100	100	100
42.0	100	100	100	100
37.0	50	100	100	100
32.0	0	0	0	0
28.0	10	10	10	10
24.0	0	0	0	0
21.0	0	0	0	0
18.0	0	0	0	0
15.5	0	0	0	0
13.5	0	0	0	0
11.5	0	0	0	0
10.0	0	0	0	0
Freshwater control (0 ppm) (I)	0	0	0	0
" " " (II)	0	0	0	0
DMSO Control (1000 ppm) (I)	0	0	0	0
DMSO Control (2500 pm) (II)	0	0	0	0

* Calculated by #Dead/10 fish per vessel

Water chemistry was acceptable within guidelines specifications.

11. Reviewer's Evaluation

A. Test procedures - the deviations from recommended protocol are acceptable because:

- aeration and daily changes of test solutions are mitigated by analytical determinations of PP 333 in Test vessels.

- use of >2000 ppm DMSO solvent in controls did not result in any mortalities or major toxic symptoms.

- use of tap water - it was "soft" by EPA criteria, and did not result in any control mortality or major toxic symptoms.

B. Statistical Analysis - the EEB "Stephan's program will not calculate a precise LC₅₀ and 95% c.i. given the dose-mortality responses obtained (not enough intermediate points), therefore the results of the Finney probit method cited are acceptable in that they are in substantial agreement with what would be expected for the raw data obtained.

C. Results:

The nominal results are acceptable as reported except that the reported LC₅₀'s should be reduced to reflect the analytical chemistry results reported in the Appendix as follows:

When Solutions Prepared - "Sample on"

<u>Nominal (mg./l)</u>	<u>Mean Analytical Conc. (mg/l)*</u>	<u>% of Nominal</u>
24.0	21.8	90.8
21.0	20.4	97.1
18.0	17.4	96.7
15.5	15.0	96.8
13.5	12.9	95.6
11.5	10.9	94.8
10.0	9.8	98.0
32.0	26.5	82.8
28.0	23.7	84.6
37.0	34.1	92.2
42.0	36.3	86.4
56.0	61.2	109.3

after each 24 hrs. before changing - "sample off" -

<u>Nominal (mg/l)</u>	<u>Mean Analytical (mg/l)*</u>	<u>% of Nominal</u>
56.6	61.2	109.3
42.0	34.5	82.1
37.0	32.1	86.8
24.0	22.0	91.7
21.0	19.2	91.4
18.0	17.1	95.0
15.5	14.8	95.5
13.5	12.9	95.6
11.5	10.8	93.9
10.0	9.3	93.0
32.0	25.5	79.7
28.0	22.6	80.7

*Mean Analytical = mean of daily determinations (N=4).

Analytical values in the range of doses providing partial responses are:

<u>Nominal (mg/l)</u>	<u>Mean Analytical Range</u>	<u>Range of % of Nominal</u>
28.0	22.6 - 23.7	80.7 - 84.6
32.0	25.5 - 26.5	79.7 - 82.8
37.0	32.1 - 34.1	86.8 - 92.2

Average % of nominals:
 for 28.0 mg/l = 82.65 %
 " 32.0 " = 81.25 %
 " 37.0 " = 89.50 %

Average of averages = 84.46%

The LC₅₀'s reported should be reduced 85% for hazard evaluation purposes to:

<u>24 Hr</u>	<u>48 Hr</u>	<u>72-Hr</u>	<u>96-Hr</u>
30.7 mg/l	28.6 mg/l	28.6 mg/l	28.1 mg/l

The investigators reduced their 96-hr value to 27.8 (26.1-30.0) mg/l. There are no significant differences between the reduced reported results and the reviewer's determination for all four (4) exposure periods.

D. Conclusions:

1. Category: Core
2. Rationale: Guidelines study.
3. Repair: N/A