

US EPA ARCHIVE DOCUMENT

1. Chemical: Aquatreat DNM-30
2. Formulation:

Sodium dimethyldithiocarbamate	15%
Nabam (disodium ethylene-bis-dithiocarbamate)	15%
Inert Ingredient	70%
3. Citation

Luy, T. 1973. Report on Fish Toxicity (using Rainbow trout). An unpublished report prepared by Wells Laboratories, Inc. for Alco Chemical Corporation. (Accession No. 241378)
4. Reviewed By: Daniel Rieder
Wildlife Biologist
5. Date Reviewed: June 3, 1980
6. Test Type: 96-hour acute toxicity with fish
 - A. Test Species: Rainbow trout (Salmo gairdneri)
 - B. Material: Aquatreat DNM-30 (30% active ingredient)
7. Reported Results

96-hour LC_{50} = 100 ppb with 95% confidence limits = 70-130 ppb.
8. Reviewer's Conclusion

This study does not meet the requirements for an acute toxicity test for fish, nor is it scientifically sound. It would appear that Aquatreat is highly toxic to fish, but the results of this test are not conclusive. This test is not considered scientifically sound because the protocol and materials used in the test were not described.

METHODS

A. Test Procedure

The method that was referenced is the one described in the American Public Health Association Standards. Essentially, nothing else is mentioned about the methods, materials and test organisms used in the study. Missing information included:

- description of the dilution water.
- source, age and history of test fish.
- description of test containers and environmental test conditions.
- number of fish per container and loading factor.

In addition, either no simultaneous controls were run, or it was not reported.

B. Statistical Analysis

The method for calculating the 96-hour LC₅₀ was not identified.

C. Results

The reported 96-hour LC₅₀ for rainbow trout exposed to Aquatreat (30% active ingredient) was 100 ppb with 95% confidence limits of 70 - 130 ppb.

Reviewer's Evaluation

A. Test Procedure

Even though an acceptable method was referenced, there is not adequate descriptive information to concur that the referenced method was followed or that test variables were within acceptable limits (i.e. test temperature, test solution characteristics, loading factor, dissolved oxygen or general environmental conditions).

B. Statistical Analysis

The data provided were used to calculate a 96-hour LC₅₀ using Stephens computer analysis. The result is an LC₅₀ of 92 ppb. The printout is attached to the original review on file with the EEB.

C. Discussion

It appears that the formulated product, Aquatreat DNM-30, is highly toxic to coldwater fish. Even though the formulated product was used in the testing, that would not necessarily cause the test to be categorized as less than core. Oil well drilling occasionally occurs in aquatic environments, and the use of a microbiocide in drilling muds in these areas could result in exposure of fish to it through disposal of cuttings, accidental spills and disposal of the spent mud.

D. Conclusion

1. Validation Category: Invalid

2. Rationale

The report fails to include many essential factors, and apparently no controls were used.

3. Repairability

This test could be repaired to supplemental or core if additional data were provided.

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
200	20	20	100	9.53674E-5
150	20	17	85.	.128841
100	20	9	45.	41.1901
50	20	3	15.	.128841

THE BINOMIAL TEST SHOWS THAT 50 AND 150 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 104.793

-----RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.175074	96.4573	78.0073	121.1

-----RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	.127193	1	.237813

SLOPE = 4.90995
 95 PERCENT CONFIDENCE LIMITS = 3.15886 AND 6.66105

LC50 = 91.5977
 95 PERCENT CONFIDENCE LIMITS = 74.721 AND 107.74
