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Data Evaluation Report

Ecological Effects Branch

1. **Chemical:** Methylene bis thiocyanate

2. **Test Material:** MBT(purity not specified) Batch No. 2702 obtained from Tenneco Organics Ltd.

3. **Study Type:** Eight day LC_{50} Dietary Study using bobwhite quail, Colinus virginicus

4. **Study Identification:**

   Study Director: Fairley, Cynthia
   Study Laboratory: Huntingdon Research Centre, U.K.
   Study Dates: May 13-21, 1985
   Study Identification: A and W/455 BT
   Sponsor: Albright and Wilson, Ltd., West Midlands, Great Britain.
   EPA Identification: MRID 150233 and Phase 3 Summary MRID 92116002

5. **Reviewed by:** Brian Montague, Fisheries Biologist
   Ecological Effects Branch
   Environmental Fate and Effects Division
   Brian Montague 10/9/90

6. **Approved By:** Ray Matheny, Supervisory Biologist
   Ecological Effects Branch
   Environmental Fate and Effects Division(H7507C)

7. **Conclusions:** The study author's conclusions are not supported by the reported test results. The instability of the material in test diets, failure to measure actual concentrations, and failure to achieve 50% mortality make this study unusable for registration purposes.

8. **Recommendations:** Results of 5 day stability testing on MBT in similar test diets and concentrations as well as identification of the % active ingredient of the test material may mitigate these concerns.

9. **Submission Purpose:** Submitted to satisfy registration guideline requirements.

10. **Study Methods and Protocol:** Protocol was based on E.P.A. Pesticide Assessment Guidelines 71-2, Avian Dietary LC_{50} test dated October, 1983.

Test Organisms: Bobwhite quail were obtained from D. R. and R. E. Wise, Monkfield, Bourn, Cambridgeshire. The birds were 2 days old. After an 8 day acclimation period the birds were randomly assigned to 9 groups of 10 birds each. The birds were housed in wooden boxes with dimensions of 80 x 50 x 60 cm and equipped with 300 watt infra-red heat lamps. Wood shavings were used as bedding. Room temperature was maintained at 31-27°C and the relative humidity remained at 51 ± 2%. The chicks were fed diet meal free of antibiotics and growth promoters. A 1.25% addition of vitamin, mineral, and trace elements supplement was included. Mean individual body weights averaged between 14.7 and 16.1 gms at test initiation when birds were 13 days of age.

Test Diet: Test diets were prepared from chick diet in meal form and prepared to an estimated stock premix concentration of 60,000 ppm. Three kg batches of individual concentration diets were prepared at levels of 500, 8450, 1335, 2457, 4176 and 7099 ppm. Three individual control groups were employed. No vehicles were needed. Samples were removed prior to initiation for analysis of homogeneity and actual measured concentration levels.

Test Material and Methods: Test diet exposure was commenced when the birds were thirteen days old and completed after 5 days, followed by a 3 day post exposure observation period. The food consumption was measured daily during the administration of the test material and once at the end of the 3 day post treatment observation period. Body weight measurements were made for each group on days 0, 5, and 8 of the test period. Behavioral observations were made daily and post mortem examinations were performed on mortalities.

11. **Reported Test Results:** The test did not produce a 50% mortality at any of the nominal concentration levels tested. One mortality was suffered at the 850 ppm test label but does not appear to be treatment related. A 20% mortality occurred in the 4176 ppm test group and 40% mortality was seen at the 7099 ppm nominal test concentration. The only observation of unusual behavior was the huddling together of birds in the highest concentration test group. Mean body weight loss was seen in the highest test level but not in the 500 to 4176 ppm test levels.

Analysis of the test diet indicated a homogeneous mix was accomplished, but that instability of the test material occurred with 24 hours in 500 and 7099 ppm diet samples. Losses ranged from 44.8% for the 500 ppm to 22.9% for the 7099 ppm test level.

12. **Study Author's Conclusions:** The subacute dietary toxicity (LC_{50}) of MBT to the Bobwhite quail was found to be 12,701 ppm (95% confidence limits, lower limit 5507 ppm with no meaningful upper limit since to few mortalities occurred at the maximum dose level).

13. **Reviewer's Discussion:** The study has not established a reliable LC_{50} estimation due to instability of MBT in the test diets and failure to achieve 50% mortality at any test level. If 22.8% degradation per 24 hours occurred for the entire test exposure period it is difficult to predict what the final actual measured concentration was after 120 hours in the highest test diet. The lower test diet measure (500 ppm) suffered an even greater reduction of 44.8% after 24 hours. The actual LC_{50} value may be much lower than predicted by the study author and may even fall below 2000 ppm, if based on an actual measured concentration after 5 days. In addition, the LC_{50} is based on a test material for which the percent of MBT has not been provided. Basic study methods used appear to have followed acceptable guidelines, though measured concentrations must be taken in future testing due to instability of the test material.

Adequacy of Study:

Classification: Invalid
Rationale: Test material was not properly identified and the laboratory failed to measure actual concentrations despite compound instability.
Repairability: If registrant can demonstrate what the actual concentrations were after 5 days and also provide the percent a.i. of the test material, upgrading may be possible.