

US EPA ARCHIVE DOCUMENT

10-9-90

**Data Evaluation Report
Ecological Effects Branch**

1. **Chemical:** Methylene bis thiocyanate
2. **Test Material:** Methylene bis thiocyanate(study does not mention purity).
3. **Study Type:** Acute Oral Toxicity to Mallard Duck, Anas platyrhynchos
4. **Study Identification:**

Study Director: Fairley, Cynthia

Study Laboratory: Huntington Research Center, U.K.

Study Dates: November 20-December 18, 1984

Study Identification: HRC Report No. A&W 453BT85116

EPA Identification: MRID 150231 and Summary MRID 92116001

5. **Reviewed by:** Brian Montague, Fisheries Biologist
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Brian Montague
10/19/90

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

Ray W Matheny

7. **Conclusions:** Reported LD₅₀ values were 45 mg/kg for males and 68 mg/kg for females with an average estimated LD₅₀ value of 56 mg/kg of body weight (CL's 41-75 mg/kg). The study has not reported the % active ingredient in the test material nor were concurrent controls used with vehicle controls.

8. **Recommendations:** Test may be upgraded if the material is identified as to percentage of active ingredient.

9. **Submission Purpose:** Study was submitted to fulfill registration guideline requirements.

10. **Study Methods and Protocol:** No particular protocol is mentioned for the design of the study, though EPA subdivision E guidelines were followed according to the report.

Test Organisms: Mallard ducks 16 weeks of age were used in the study. The ducks were obtained from the County Game Farm, Home Farm, Ashford, Kent, Great Britain on 10/23/84. Thirty males and 30 females were divided randomly into six groups of 10 birds (5♂s, 5 females) for each treatment level and the controls. Birds were identified by metal wing tags. After a 14-day acclimation period the birds were fasted overnight.

Test Diet Preparation: The compound was administered in a suspension vehicle of carboxy methyl-cellulose (0.3% w/v). Dosage syringes were set so that birds received 10 ml solution/kg of body weight at concentrations of 0, 6, 12, 24, 48, and 96 mg/kg. A rubber catheter and syringes were used to orally intubate the birds. Dry feed diet in pellet form was provided ad libitum after intubation.

Test Materials and Methods: Following intubation birds were returned to galvanized steel and wire mesh pens measuring 0.7 x 1.4 meters and equipped with auto-watering and feeding boxes. Temperature was maintained between 10 and 21°C and humidity between 62-87%. These parameters were monitored daily.

All birds were identified with numbered metal wing tags. Observation of the test birds was made daily and individual body weight and group food consumption was made on a weekly basis beginning two weeks prior to and ending two weeks after oral intubation. Pathological examination was made on all mortalities. After testing was completed all surviving birds in the 96 mg/kg and 48 mg/kg group and three from the 24 mg/kg group were sacrificed and pathologically examined.

Reported Test Results: Nine out of 10 test birds died at the 96 mg/kg test level. Four out of 10 test birds died at the 48 mg/kg test level. Males had higher mortality rates than females. Thirteen mortalities occurred within two hours after dosing. One occurred on day two. Clinical signs observed at 96, 48, and 24 mg/kg dose levels included unsteadiness, squatting, and inability to stand. These symptoms occurred within a few minutes of dosing and continued as long as nine days in the highest dosage group.

A significant reduction in body weight was seen at the 96 mg/kg dosage group. A significant reduction in body weight was seen at the 96 mg/kg dosage with the surviving females. Other body weights were comparable to control birds. Reduction in food consumption/bird was seen only at the 96 mg/kg test level. No other signs were noted in the report.

12. Study Author's Conclusions: "The acute and oral LD₅₀ value for MBT to mallard ducks was found to be 56 mg/kg (95% confidence limits 41-75 mg/kg)."

13. Reviewer's Discussion: In initial range finding tests using only two birds, 100% mortality occurred at 50 mg/kg dosage levels. Though the test material is assumed to be of technical grade, no confirmation of this is reported in the original report or in the accompanying Phase 3 summary report. The batch number is reported as 2702 from Tenneco Organics, Limited in Bristol. The purity of the substance must be reported and it must be of technical grade to satisfy 71-1 requirements. A three percent carboxy methyl cellulose vehicle was employed. EPA recommends a one percent carbon methyl cellulose mixture for vehicle use. However, no effect could be seen from use of the higher percentage vehicle.

Concurrent control and vehicle control groups were not employed as is required by 71-1 guidelines. However, no mortality was observed in the vehicle control and so it is assumed that the vehicle had no affect on the study results.

Adequacy of Study:

Classification: Invalid

Rationale: Percent active ingredient in test material has not been reported.

Repairability: Repairable to core if requested data is provided.