

US EPA ARCHIVE DOCUMENT

8-28-91

Data Evaluation Record

1. Chemical: 3,5,6-Trichloro-2-pyridinol (Chlorpyrifos degradate)
Shaughnessy No.:206900

2. Test Material: 3,5,6-Trichloro-2-pyridinol, 99.9% pure, AGR
143197, CAS#6515-38-4, a white solid.

3. Study type: Avian Dietary LC₅₀

Test Species: Mallard duck (Anas platyrhynchos)

4. Study ID: Long, R., Hoxter, K.A., and Jaber, M. 3,5,6-
Trichloro-2-pyridinol: A dietary LC₅₀ study with the mallard.
Wildlife International, 305 Commerce Drive, Easton,
MD for the Dow Chemical Company. Study ID #103-346.
MRID 418290-02.

5. Reviewed by: Kathryn Valente
Biologist
EEB/EFED

Signature: *Kathryn F. Valente*
Date: 8/14/91

6. Approved by: Allen Vaughan
Acting Head, Section II
EEB/EFED

Signature: *Allen W. Vaughan*
Date: 8.28.91

7. Conclusions: The study is scientifically sound; however, due
~~to the lack of a solvent control and the occurrence of~~
~~sublethal effects at all levels tested, It is classified as~~
~~supplemental.~~ With an LC₅₀ of >5620 ppm, the test material is
considered to be practically non-toxic to the mallard.

*Upgraded
to case
K.F.V. 4/14/92*

8. Recommendations: A solvent control should be run whenever a
solvent other than water is used.

9. Background information: This study was submitted under the
requirements of the registration standard for chlorpyrifos.

10. Discussion of Individual Tests: N/A

11. Materials and Methods:

a. Test animals: Mallards were obtained from Whistling Wings
in Hanover, Illinois. The birds were 10 days old and ranged
in weight from 160-179 grams at test initiation. All test
birds were acclimated to the caging and facilities for
approximately 8 days prior to testing. The birds were
maintained on a 16 hour light/8 hour dark photoperiod at 33
C +/- 3 C in the brooder compartment (21 C +/- 2 C average
ambient temperature) and average relative humidity of 51% +/-
9%.

b. Dosing regime: The test substance was dissolved in corn oil and acetone and mixed into the basal diet (Wildlife International's Game Bird Ration) with a Hobart mixer. The concentration of corn oil in the test and control diets was 2%. One hundred mL of acetone was used in the preparation of each of the test diets. There was no acetone added to the control diet. Nominal dietary test concentrations of 3,5,6-trichloro-2-pyridinol used were 562, 1000, 1780, 3160 and 5620 ppm a.i.. Birds were maintained on the test diets for 5 days, followed by a 3 day post-exposure observation period during which the birds were maintained on the untreated basal diet.

c. Study design: Ten birds were assigned to each treatment level, including three control groups. The birds could not be differentiated by sex due to age. Observations for mortality and sublethal effects were made daily throughout the exposure and post-exposure periods. Individual body weights by group were measured at test initiation, on day 5 and at the end of the test, day 8. Average estimated feed consumption was determined for each group for days 0-5, and 6-8.

d. Statistics: The lack of mortality in this study prevented the calculation of an LC₅₀ value using the computer program of Stephan et al, which normally calculates LC₅₀ values using probit analysis, moving average method or the binomial probability method. An estimation of the LC₅₀ was therefore made by visual inspection of the mortality data.

12. Reported Results: Mallards were exposed to five nominal concentrations of 3,5,6-trichloro-2-pyridinol: 562, 1000, 1780, 3160 and 5620 ppm. There was a single mortality (10%) at 1000 ppm and 2 mortalities (20%) at 3160 ppm. Two birds at 3160 ppm demonstrated signs of toxicity: lethargy, reduced reaction to external stimuli, loss of coordination, lower limb weakness and a ruffled posture in 1 bird on day 2, and lethargy, depression, reduced reaction to external stimuli, prostration, loss of righting reflex, lower limb rigidity and convulsions in another bird on day 3. There was one bird in this group found dead on day 3, and the second bird to exhibit signs of toxicity was found dead on day 4. The bird which died at 1000 ppm did not exhibit any abnormal behavior prior to death. There was no mortality or abnormal behavior observed in any other group. Body weight gain was reduced at all concentrations of the test material. Based on these observations, the LC₅₀ was determined to be >5620 ppm, and the NOEL was determined to be <562 ppm.
13. Study Author's Conclusions/Quality Assurance Report: The LC₅₀ value was >5620 ppm. The NOEL was <562 ppm, based on the reduction in body weight gain seen at all levels tested.

Quality Assurance and Good Laboratory Practice statements were included in the report.

14. Reviewer's Discussion and Interpretation of the Results:

a. Test Procedure: The test design and procedure were generally in accordance with protocols recommended by the Guidelines. However, there was no acetone added to the control diet, whereas 100 mL of acetone was added to each test diet. The Guidelines require that a solvent control be included whenever a solvent other than water is used in the preparation of the test diet.

b. Statistical Analysis: The LC_{50} could not be directly calculated due to the lack of mortality. However, the study shows that the LC_{50} is greater than 5000 ppm, which is in accordance with the Guidelines.

c. Discussion/Results: The study is scientifically sound; however, due to the occurrence of mortalities at 1000 and 3160 ppm, the exhibition of abnormal behavior at 3160 ppm and the reduction in body weight gain at all levels, there is some concern about the possibility of hazard from 3,5,6-trichloro-2-pyridinol. Also, the lack of a solvent control raises the possibility that the adverse effects seen in this study may have been caused by the solvent or an interaction of the solvent with the test chemical. The study is therefore classified as supplemental. Additional data are needed before the study can be classified as core.

d. Adequacy of the study:

(1) Classification: ~~Supplemental.~~ Core (EAV 4/15/92)

(2) Rationale: ~~No solvent control was included in the study, which is not in accordance with the Guidelines. Also, there were sublethal effects (reduced body weight gain) observed at all concentrations tested.~~

(3) Repairability: None.