DATA EVALUATION RECORD PAGE 1 OF

CASE: GS0333 FENAMIPHOS

CONT-CAT: 01 GUIDELINES: 71-5

MRID: 121293

Carlisle, J.; Lamb, D. (1982) Nemacur 3: Avian Field Study: Study No. 82-905-01; 82266. (Unpublished study received December 16, 1982 under 3125-283; submitted by Mobay Chemical Corp., Kansas City, MO; CDL:071291-F).

REVIEW RESULTS:

VALID X INVALID _____ INCOMPLETE _____

GUIDELINE: SATISFIED ___ PARTIALLY SATISFIED ___ NOT SATISFIED X

DIRECT RVW TIME = START DATE: END DATE:

REVIEWED BY: Richard W. Felthousen

TITLE: Wildlife Biologist

ORG: EEB/HED

LOC/TEL: 557-1392

SIGNATURE: R W Felthousen DATE: 12/03/86

APPROVED BY: O. Gutenson

TITLE: Acting Registration Standard Coordinator

ORG: EEB/HED

LOC/TEL:

SIGNATURE: O Gutenson DATE: 12/21/87

The field study demonstrates that high rates of Nemacur 3 can represent a hazard to birds and small mammals that forage in treated areas. The study is acceptable and can be used in a hazard assessment. However, because of design discrepancies it does not satisfy data requirement for an avian field study.

6 pages

DATA EVALUATION

1. Chemical: Nemacur

2. Formulation: Nemacur 3 (35% ai)

3. Citation: Carlisle, JC. 1982. Nemacur 3 Avian Field Study. Reference Tox 320; 82266. Mobay Chemical Corp. (EPA Accession No. 071291).

4. Reviewed By: Charles A. Bowen II
Fisheries Biologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769)

5. Date Reviewed: March 3, 1983

6. Test Type: 41-day Field Study

A. Test Species: Mixed Avian Species

7. Reported Results:

Twenty six (26) acres of orchard were sprayed at the rate of 23.8 lbs ai/acre in the late spring of 1982. Under these conditions Nemacur 3 was associated with significant avian (robins, sparrows, starlings) and mammalian (rabbits, woodchucks) mortalities over the next 5 days. The hazard to nontarget wildlife was apparently eliminated by 0.9 inches of rainfall. Repopulation of the treated orchard was nearly completed by 1-month post application.

8. Reviewer's Conclusion:

This bioassay is scientifically sound and demonstrates that high rates of Nemacur 3 can represent a hazard to birds and small mammals that forage in treated areas. This study is acceptable and can be used to support product registration.

9. Test Procedures:

Two plots of 26.5 acres each, 1 mile apart at their nearest points were used. Each contained some buildings, but their net orchard area was approximately the same. Each plot was bordered by a road on one side, woods on one side, and, an orchard on one side. The fourth side of the treated plot was formed by a brushy border, then a highway, while the fourth side of the control plot was partly orchard and partly corn field. Both plots were located in Wayne County, New York.

A 10- to 12-foot wide band centered on each tree row was treated using a tractor-pulled boom sprayer with three nozzles; one pass on each side of the tree row was required. The test compound was diluted to 0.45 lbs/gal by adding 75 gallons of Nemacur 3 (225 lbs ai) to 500 gallons. Although the calculated application rate was 20 lbs ai/acre, the 500 gallons covered 9.44 acres for an actual application rate of 23.8 lbs ai/acre.

$$[500 \text{ gal} \times 0.45 \frac{\text{lbs}}{\text{gal}} \div 9.44 \text{ acres}]$$

The strip observation method was applied by walking down the center of alternate rows, odd rows one time, even the next, covering 24 feet on either side of the observer each pass. Dead birds were collected and counted from this 48-foot wide band. Birds were not counted unless they were actually seen. Furthermore, they were counted only if they were within the space limited by a line 12 feet beyond the last row of trees on all sides and with the treetops as the upper limit. Birds that were seen, but not in sufficient detail to identify them, were counted as "unknown." Morning observations were made between 5:45 and 10:15 a.m. and evening observations between 4:00 and 8:40 p.m. Each plot was observed for a minimum of 1 hour 40 minutes and a maximum of 1 hour 55 minutes with the treated and control plots always observed for the same amount of time.

Weather conditions were noted. Rainfall was measured using a rain gauge, but temperatures were estimated.

Calls and songs heard could not be quantitatively recorded, but subjective observations were noted, particularly if their frequency seemed disproportionate to the number of sightings.

Non-avian animals were seen only infrequently, but their presence and condition were noted.

Dead animals were counted and collected to be frozen for later analysis if required. Sick animals were collected if they could be caught. Cross necropsy examinations were conducted on dead or moribund mammals.

10. Results and Discussion:

No sick or dead animals were observed in the control orchard or in the treated orchard prior to treatment. Numbers of sick and dead animals were added and entered in a single column headed Mortality and Morbidity (Table I). Sightings in the treated orchard ranged from 49 to 72 representing 5 to 9 identified species before application, and from 3 to 26 representing 1 to 7 identified species after application. The counts in the control plot were somewhat more variable, ranging from 24 to 84 representing 3 to 8 identified species during days -6 to 0, and 6 to 69 sightings representing 3 to 8 species for days 0 to 33. Expressed as a function of control sightings, those in the treated orchard fell abruptly after Nemacur application, then increased approaching unity a month after application.

Zero to 16 dead or moribund birds per observation period were counted in the treated plot on days 0 to 5 (table I and figure I).

On the afternoon of day 5, 0.9 inches of rain fell, and no further mortality or morbidity was observed. Counts began to increase in the treated plot on day 1 and leveled off in the 9 to 18 range during days 2 to 8. While this is considerably lower than preapplication counts, control counts were also considerably reduced on days 4 to 8. This is attributed, in part, to foggy or hazy conditions during this period. Auditory evidence of birds during this period was often greater than visual. Low counts in both treated and control plots on day 32 were attributed to hot weather.

Two active nests were observed in the treated plot before Nemacur was applied. Neither was observed to be tended following Nemacur application. Although the offspring were apparently not harmed directly by the test compound, they ultimately did not survive abandonment. A new tended nest was present in the treated plot on days 32 and 33.

Species lethally affected by the compound were clearly those which foraged on the ground, principally robins, sparrows, and starlings. A woodchuck, found dead on the morning after application, had pulmonary edema. A rabbit found dead at the same time showed no gross lesions except that it had been chewed on. The following morning a moribund rabbit was found with evidence of salivation and diarrhea.

There appeared to be little repellent activity of the compound, since song birds were present in nearly normal numbers the day after application, while there were toxic levels of the compound present on the ground for 5 days post application.

In a pond located at the edge of the treated orchard, general activity did not change following application, and no dead animals were seen.

11. EEB Statistical Analysis:

Not applicable, observations not recorded in a manner that they can be statistically analyzed.

12. Reviewer's Conclusions:

The author's conclusions are supported by the data presented in table 1 and figure 1. Deviation from recommended protocols are as follows:

1. Type of orchard was not identified.
2. Body weight of species lethally effected were not reported.
3. Dead or moribund birds were not individually identified.
4. The experiment design does not provide for statistical analysis.
5. Measure residues on potential avian dietary items and soil were not reported.
6. Concurrent control plots were not used.
7. The number of test plot was insufficient.

This study is in effect a carcass search of two 26-acre plots. Methods implied do not depict the effects of fenamiphos on nontarget birds and mammals. These data do indicate, however, the need for a scientifically sound field study. EEB records show that the registrant did not submit protocols for Branch review.

13. Validation Category: Supplemental

14. Category Repairability: N.A.

Ecological Effects Branch Reviews - Fenamiphos

Page 6 is not included. The page contains detailed test data submitted by the Mobay Corporation and stamped confidential.