DATA EVALUATION RECORD PAGE 1 OF

CASE: GS0333 FENAMIPHOS

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CONT-CAT: 01 GUIDELINES: 71-5 Same as 00002596

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MRID: 109584

Lamb, D.; Horton, J.; Jones, R. (1974) Toxicity of Nemacur 15% Granular to Natural Bird Population under Field Conditions and Bobwhite Quail under Simulated Field Conditions for Nonbearing Fruit Trees: Report No. 42063. (Unpublished study received November 21, 1974 under 3125-EX-124; submitted by Mobay Chemical Corp., Kansas City, MO; CDL:248069-C).

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REVIEW RESULTS:

VALID_____ INVALID X INCOMPLETE_____

GUIDELINE: SATISFIED ___ PARTIALLY SATISFIED ___ NOT SATISFIED X

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DIRECT RVW TIME = START DATE: END DATE:

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REVIEWED BY: Richard W. Felthousen

TITLE: Wildlife Biologist

ORG: EEB/HED

LOC/TEL: 557-1392

SIGNATURE: [signature] DATE: 12/05/86

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APPROVED BY: O. Gutenson

TITLE: Acting Registration Standard Coordinator

ORG: EEB/HED

LOC/TEL:

SIGNATURE: [signature] DATE: 12/21/87

The bobwhite quail portion of the study did not follow recommended protocol in that pens were not moved daily. Problems with the bird census portion of the study (i.e., inadequate carcass search technique, length of transect lines) also cast doubt in the usefulness of the study to predict hazard. Cannot be used to satisfy data requirement for avian field study.

5 pages

DATA EVALUATION RECDRD

1. CHEMICAL: Nemacur

2. FORMULATION: Nemacur 15% Granular (Formulated Product)

3. CITATION: Lamb, D.W., J.R. Horton, and R.E. Jones, (1974). Toxicity of Nemacur 15% Granular to Natural Bird Population Under Field Conditions and Bobwhite Quail Under Simulated Field Conditions for Nonbearing Fruit Trees. Report No. 42063 submitted by Mobay Chemical Corp., Kansas City, Mo.

4. REVIEWED BY: L.W. Touart
Fisheries Biologist
EEB/HED

5. DATE REVIEWED: 12/14/79

6. TEST TYPE: Avian Field Study (Non-bearing Fruit Trees)

A. TEST SPECIES: Natural Avian Population and Bobwhite Quail

7. REPORTED RESULTS: There was no effect noted on the natural bird populations attributable to the treatment. There was no difference between the treated and control average weight change of the quail. Dne treated female died on experimental day 7 after losing 62 g. There were no signs of toxic symptoms in any other treated quail. Under the conditions of this study there was little or no hazard to the natural bird population or to Bobwhite Quail when applied at a rate of 133 lbs/A on nonbearing deciduous fruit tres.

8. REVIEWERS CONCLUSIONS: The test is not scientifically adequate to support its conclusions. The study does not fulfill the requirements for an acceptable avian field study.

## Materials/Methods

The treated area was a peach orchard (144' x 216') planted in the spring of 1972. The control area was an apple orchard (150' x 420') planted in the spring of 1974. Both areas were bordered by roughly equivalent environments. The orchards were located on the Chemagro Research Farm (Stanley, KS).

The study was conducted in two stages. The first stage was to determine the effect of the application on the natural bird population in the orchard. Only the area between each tree within the tree row was subject to treatment. The grass strip between the tree rows was not treated. The 48 sq. ft. (6' x 8') area between each tree was treated in seventy-two such plots, representing approximately half of the total number of such available plots. Sixty-seven grams of Nemacur Granules were applied to each small plot with a hand shaker and disced before and after application for incorporation. The treatment was equivalent to 133 lbs/acre in the treated plot. The second stage of the study consisted of caging bobwhite quail on 12 of the 48 sq. ft. plots not previously treated in the first stage. The second stage was not initiated until the first stage was concluded.

In the first stage the natural bird population was monitored on pretreatment experimental days 8, 6, 4 and 1 and on post-treatment experimental days 1, 3, 8, 10, 13, and 15. The actions of the birds were recorded by species in 3 ways; according to whether they landed in the areas, flew over the areas or were heard but not seen in or near the areas. The control area was monitored from 7:30 to 8:00 AM and the treated area was monitored from 8:00 to 8:30 AM on each observation day. A transect was chosen for both areas and observed on experimental days 1 and 15 for birds showing toxic symptoms or death.

The cages used in the second stage were a metal rod frame covered with 1/2 inch hardware cloth and measured 4' x 5' x 3'. Each cage contained a waterer, small wooden shelter and feed on the ground. Two quails (one male and one female) were placed in each cage. Half of the treated and control quail did not receive supplemental feed for 17 hours. The quail were weighed on Experimental Days 0, 7 and 14.

Daily observations were made for toxic symptoms and deaths. If a death occurred, a replacement was weighed and introduced into the cage on the same day. On the final day the replacements were handled in the same manner as the original animals.

## Discussion/Results

There was no effect noted on the natural bird populations attributable to the treatment. The average number of pretreatment observations/day was 12/14/5 (in plot/flying over plot/heard in or near plot) in the treated area. The post-treatment daily averages were 12/22/3. In the

control area the pretreatment daily averages were 34/43/3 and post-treatment averages were 10/42/2. No mortality or toxic symptoms were observed during the transect observations or during the normal monitoring periods after treatment.

There was no difference between the treated and control average weight change of the quail. One treated female died on Experimental Day 7 after losing 62g. This bird exhibited toxic symptoms of fluffed feathers, hypoactivity and immobility for 2 days before death. There were no signs of toxic symptoms in any of the other treated quail.

Under the conditions of this study there was little or no hazard to the natural bird population or to bobwhite quail when applied at a rate of 133 lbs/A on nonbearing deciduous fruit trees.

Reviewers Evaluation

A. Test Procedures

The experimental design and protocol were not sufficient to support the objectives or conclusions of the study. Specific inadequacies include the total area subjected to treatment in stage 1, the types of observations made, frequency of mortality searches, size of pen in stage two, failure to allow birds to adjust to pen conditions, premature addition of supplemental feed, failure to analyze birds after the pen studies (i.e., necropsy, brain acetylcholinesterase, chemical residues, etc.)

B. Statistical Analysis N/A

C. Discussion/Results

Examples of adequate field studies are referenced in the EPA proposed guidelines of July 10, 1978. Several specific criticisms can be made for this study.

In stage 1 of this study (monitoring the effects of an application of Nemacur 15% granular on the natural bird population in a non-bearing deciduous fruit orchard) the experimental design and protocol were grossly inadequate. The treated area should have been more realistic in terms of actual use patterns. Several small plots within a test orchard are just not sufficient to reliably simulate a field exposure. Observations of bird species are useful for only birds seen in the treated area; transient flocks and heard bird sounds are supplemental information at best. Observations of birds should be made in an area inclusive but larger than the test field. Observations for mortality and toxic signs should be made in the aforementioned larger area daily and along transect lines. Daily searches are mandatory

because of the rapid disappearance and associated difficulty in observing dead or impaired birds (see Rosene and Lay, 1963 and Herman and Bulger, 1979).

In the second stage of the study, the protocol is somewhat similar to the recommended protocol for a short-term (small pen) field test for birds, but there are major flaws in the methods. When farm-reared birds are placed in a field pen, a characteristic initial weight loss is common. To insure this weight reduction will not affect test results birds should be acclimated to the field pen condition, preferably in the field used for the test, at least 14 days prior to initiation of the study. Replacement birds cannot be used in the statistical analysis of the final results. Surviving birds should be sacrificed at the completion of the study and analyzed for pathology and chemical residue (i.e. necropsy, brain acetylcholinesterase, accumulation, etc.).

D. Conclusions

1. Category: Invalid

2. Rationale: The experimental protocol was inadequate, and did not follow the procedures referenced in the EPA proposed guidelines of July, 1978.

3. Repairability: No.

References:

Herman, S.G., and J.B. Bulger, (1979) Effects of a Forest Application of DDT on Non-Target Organisms, Wildlife Monographs, No. 69, Supplement to J. Wildlife Management 43(4):5-59.

Rosene, W. Jr. and D.W. Lay. (1963) Disappearance and Visibility of Quail Remains. J. Wildlife Management 15:213-216.