3-24-83

(TDRC3B) DATA EVALUATION RECORD PAGE 1 OF

CASE GS01v3 PHORATE PM 300 ~~08/27/82~~

CHEM 057201 Phorate (O,O-diethyl S-((ethylthio)met

BRANCH EEB DISC 40 TOPIC 05103542 GUIDELINE 40 CFR 163.71-5

FORMULATION 12 - EMULSIFIABLE CONCENTRATE (EC OR E)

FICHE/MASTER ID 00052237 CONTENT CAT 01

Roever, K. (1971) Wildlife--Thimet¬(R)¤ Exposure Study: WestAg 71033. (Unpublished study received Apr 22, 1970 under 241-102; submitted by American Cyanamid Co., Princeton, N.J.; CDL: 001992-E)

SUBST. CLASS = M; OTHER CHEMS: 086802

OTHER SUBJECT DESCRIPTORS
SEC: EEB -40-05103541 TOX -40-05103521

DIRECT RVW TIME = 12 (MH) START-DATE 3/23/84 END DATE 3/24/83

REVIEWED BY: Ann Stavola
TITLE: Aquatic Biologist
ORG: HED/EEB
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SIGNATURE: Ann Stavola DATE: 3/24/83

APPROVED BY:
TITLE:
ORG:
LOC/TEL:
SIGNATURE: DATE:

DATA EVALUATION RECORD

CHEMICAL: Phorate

FORMULATION: Thimet 600 E.C.

CITATION: Roever, K. (1971) Wildlife -- Thimet - (R) Exposure Study: West Ag. 71033. (Unpublished study received Apr 22, 1970 under 241-102; Submitted by American Cyanamid Co., Princeton, N.J.; CDL: 001992-E).

REVIEWED BY: Ann Stavola
Aquatic Biologist
HED/EEB

DATE REVIEWED: March 23, 1983

TEST TYPE: Small pen field test - avian and mammalian

Cotton rabbit	Bobwhite quail
Domestic rabbit	Ring-necked pheasant

REPORTED RESULTS: Thimet was lethal to caged rabbits but notcaged birds. This is likely due to the fact that the main food item of the rabbits was the sprayed alfalfa, whereas the birds fed on a limited number of sprayed invertebrates.

REVIEWER'S CONCLUSIONS: The study is scientifically sound and meets our guideline requirements for a small pen field study.

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Materials and Methods
Test Procedures

The animals used in this study were: bobwhite quail (Colinus vigianus); ring-necked pheasants (Phasianus colchicus); cottontail rabbits (Sulvilagus audubonii) and domestic white rabbits. With the exception of the domestic rabbits all animals were kept in outdoor cages for at least 10 days prior to treatment.

The cages were constructed of welded wire with a 1 inch by 9 inch mesh on the sides and a 1 inch by 20 inch mesh on the top. All cages were 5 feet long, 4 feet wide and 18 inches high.

This test was located in an alfalfa field one mile south of Tempe, Maricopa County, Arizona. Irrigation borders were located in such a manner that the test area was divided into blocks of approximately 1.8 acres each. The experiment was designed to include two treatments; a check plot (water) and a treated plot (toxicant plus water). Each treatment was applied to two adjoining "borders" (3.6 acres) with the two treatments separated by an untreated buffer zone of 3.6 acres which was 160 feet wide.

Each plot contained 21 cages with the contents as follows:
4 cages, each with a pair of adult quail (42 weeks old)
4 cages, each with a pair of immature quail (7 weeks old)
4 cages, each with a pair of adult pheasants (46 to 58 weeks old)
4 cages, each with a pair of immature pheasants (8 weeks old)
5 cages, each with a pair of adult cottontail rabbits
1 cage each with 3 immature domestic rabbits.

Each treated plot was subdivided equally so the food and water supply for half of the animals was exposed to spray contamination, whereas the food and water for the remaining animals was not contaminated. In the latter case contamination was avoided by introducing the food and water twelve hours after the spray applications. Because the rabbits fed primarily on the alfalfa growing in the plots it is suspected that the contamination vs. noncontamination of supplemental food and water did not furnish a meaningful comparison.

Both treatments were applied between 5:45 and 6:45 P.M. on May 6, 1971. Applications were made with the aid of a high clearance tractor mounted sprayer that delivered 20 gallons of spray mixture per acre. The toxicant plot received thimet 600 E.C. at 1 pound active ingredient per acre. At the time of application wind velocity was less than 2 mph and the temperature range was 60-68 °F.

Observations following treatment were made at intervals of 4 hours for the first 48 hours and at 12 hour intervals thereafter.

Animals that died in the test area were replaced by untreated animals from holding pens. At the conclusion of the test all dead animals were skinned or plucked, decapitated and eviscerated.

Results and Discussion
Rabbits

Ten cottontails and three domestic rabbits were exposed directly to the Thimet spray application and a like number of animals were exposed to a plain water spray. During the thirty minute observation period following treatment all cottontails remained passive, showing no indication of poisoning. The domestic rabbits licked their fur and erratically jumped around in the cages immediately after treatment. The observed restlessness would have been interpreted as an initial symptom of poisoning had not the control animals behaved in a similar manner. Apparently this reaction was merely to the discomfort caused by wet fur.

When the next observations were made approximately 3 1/2 hours after the application all Thimet-treated rabbits were dead and all the control rabbits were alive. The death of replacement rabbits occurred as follows:

May 7 - 4 dead (after 7 hours exposure)

May 9 - 1 dead (after 55 hours exposure)

May 10 - 1 dead (after 73 hours exposure)

May 12 - 2 dead (after 115 and 120 hours exposure)

May 13 - 2 dead (after 140 and 168 hours exposure)

May 15 - 2 dead (after 132 and 188 hours exposure)

May 19 - 1 dead (after 168 hours exposure)

Due to the lack of a reserve supply of cottontails, which resulted from high mortality during the pretreatment holding period, domestic rabbits were in most cases used as replacement animals.

Three of the replacement rabbits showed symptoms of intoxication. These included regurgitation, becoming prostrate and having tremors. Two of these rabbits died.

One of the rabbits in the control plot died, but the causes were not explained.

Weight data indicate that cottontails which survived to the conclusion of the test generally showed weight loss regardless of treatment. Immature domestic rabbits which survived to the conclusion of the test showed weight gains without exception. Rabbits which died during the test showed either weight loss or only slight gain.

Adult Pheasants

No adult pheasants died during the post-treatment period in the treated plot, although one adult died in the control plot. This bird had caught its head in the mesh. Symptoms of poisoning were not evident during the post-treatment period.

The weight data indicate that many of the birds especially the cocks, were in a stressed condition regardless of the treatment.

Immature Pheasants

No immature pheasants died during the post-treatment period in the treated plot, although 2 birds died in the control plot. One of the deaths was believed to have been caused by agitation by a predator. Symptoms of poisoning were not observed.

The weight data indicate that all birds, regardless of treatment, gained weight.

Adult Quail

No adult quail, either treated or untreated, died during the post-treatment observation period. Symptoms of poisoning were not observed.

A comparison of weight changes for treated and untreated birds indicates the Thimet treatment did not have an adverse effect.

Immature Quail

Two immature quail died in the treated plot during the post-treatment period, but no deaths occurred in the control plot. The two dead quail died in the same cage 9 to 12 hours after treatment. Symptoms of poisoning were not observed in any quail, including the two that died.

The weight data indicate that birds in both groups generally gained weight.

Reviewer's Evaluation
Materials and Methods
Test Procedures

The test procedures follow the protocol for the small pen field test in the guidelines of July 10, 1978.

Results and Discussion

The lack of deaths of birds exposed to Thimet as compared to the large mortality of rabbits may be attributed to the fact that the Thimet-treated alfalfa constituted the major food item of the rabbits but not of the birds. The guidelines indicate that small pen studies may underestimate the hazards

to birds since the caged birds have access to a limited number of invertebrates that were sprayed with the pesticide as compared to free birds.

The weight data cannot be used as an indication of Thimet poisoning since there was no consistent pattern regarding animals that died or survived exposure to Thimet and control animals.

Examination of the weight data for the rabbits indicates that the author's conclusions are incorrect. Cottontails and domestic rabbits that survived to the end of the test showed both weight gains and weight losses. However, the majority of rabbits had weight gains.

Conclusions

1. Category: Core