11-5-80

MULTIPLE

TDMS0030 DATA EVALUATION RECORD PAGE 1 OF 3

CASE GS0014 ENDOSULFAN A - (11/21/79) PM 110 ~~12/26/79~~

CHEM 079401 Endosulfan (hexachlorohexahydromethano)

BRANCH EEB DISC 40 TOPIC 15000046

FORMULATION 12 - EMULSIFIABLE CONCENTRATE (EC OR E)

FICHE/MASTER ID 05013090 CONTENT CAT 01

Okada, I.; Hoshiba, H. (1970) Mitsubachi Ni Taisuru 2,3 Satsuchuzai No Dokusei. [A Laboratory Experiment on the Toxicity of Some Insecticides on Honeybee.] Tamagawa Daigaku Nogakubu Kenkyu Hokoku. [Bulletin of the Faculty of Agriculture, Tamagawa University.] 10:79-85.

SUBST. CLASS = S.

DIRECT RVW TIME = 2 Hrs. (MH) START-DATE 10/21/80 END DATE 10/21/80

REVIEWED BY: Allen W. Vaughan
TITLE: Entomologist
ORG: EEB/HED
LOC/TEL: Crystal Mall #2/557-0268

SIGNATURE: Allen W. Vaughan DATE: 11/5/80

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

CONCLUSIONS: This study is scientifically sound.

METHODS AND MATERIALS:

Test Type - Toxicity to honey bee.

Test Species - Honey bee (Apis mellifera).

Experiment A (Authors' discussion) - Insects used and rearing method: Worker bees (worker bee: hereafter will simply be called honeybee) of a western strain (Apis mellifera L.) were selected from a single hive box. The young bees were anaesthetized with CO_2 and were placed in lots of 50 bees each into separate 3 cm long, 5 cm wide, and 8.5 cm tall all-metal screen cages. These were placed on a feeding plate and placed in a 32 ± 1°C temperature and 60-80% humidity environment maintained in a constant temperature bath. At about 24 hours following anaesthesia the incidence of any deaths from the CO_2 treatment was checked, and the live bees were then used for the experiment. These bees were fed lotus honey produced in Tottori Prefecture which was given as received.

Test method: The dipping method was used. The emulsion was diluted to the prescribed concentration with distilled water, and this solution was placed in a 1,000 ml beaker where its temperature was adjusted to 32 ± 1°C. The cages with the honeybees were immersed in this solution. The cages were removed after 3 minutes had elapsed, the cage was wrapped with paper and shaken gently, and as much as possible of the agent adhering to the cage and bees was removed in this manner.

After this treatment, the bees were once again placed on the feeding plate which was then returned to the constant temperature chamber, and the dead bees were counted after 24 hours. It was decided to class those bees with difficulty in walking as "dead."

The controls were steeped in an equal volume of distilled water, and all the other steps were the same as described above.

The experimental data obtained in this manner were corrected according to Abbot's correction formula after which the results were converted to probit, and the median lethal dose (LC_{50}) determined.

(Authors' discussion)

Experiment B - Insect used and rearing method:
The honeybees were selected from five of the female groups from the same hive. The bees were stilled by CO_2 anaesthesia and used 30 minutes later in the experiment which together with the use of 20 bees per cage were the only differences from the experimental procedure described for experiment A.

Test method: The sample pesticide was used in a dilution, using acetone as diluent. This solution was applied in 2 ul doses to the abdomen of the bee using a micro syringe (microapplicator) following the topical application method. The same volume of acetone was applied to the untreated control group of bees. The dead count was made 72 hours after this treatment.

The data so obtained was converted to probit values, and the medium lethal dose (LD_{50}) was determined.

REPORTED RESULTS:

Based on data from two types of testing (dipping and topical application), test pesticides may be categorized as follows:

1) Highly toxic to bees: sumithion, denapon, BHC

2) Moderately toxic to bees: hoppside, DDT, malix (endosulfan), endrin

DISCUSSION:

A. Test Procedure - Procedure is sound.

B. Statistical Analysis - Analysis as performed by the authors was assumed to be valid.

C. Discussion/Results - This study is scientifically sound.