10-14-82

DATA EVALUATION RECORD

CASE GS 0096 PICLORAM PAGE 1 OF 5

CHEM 005101

BRANCH EEB DISC Aquatic Organism: Residue Study

FORMULATION Powder

Bidlack, H. D. 1980. Kinetics of "Aged" Picloram in a Model Aquatic Microcosm. Agricultural Products Department. The Dow Chemical Company. Midland, Michigan.

SUBST. CLASS = S

DIRECT RVW TIME = (MH)

REVIEWED BY: M. A. Mayes, Ph.D.
TITLE: Aquatic Toxicologist
ORG: Health and Environmental Sciences
LOC/TEL: The Dow Chemical Company

SIGNATURE: Monte A Mayes DATE: 10-14-82

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

CONCLUSIONS

This study is scientifically sound. Picloram has a bioconcentration factor of less than one and thus will not accumulate in aquatic organisms. This test is not required for the registration of picloram.

DATA EVALUATION RECORD

1. CHEMICAL: Picloram (4-amino-3,5,6-trichloropicolinic acid)

2. FORMULATION: Picloram 99.6% Pure Lot #188.

3. CITATION: Bidlack, H. D. 1980. Kinetics of "Aged" Picloram in a Model Aquatic Microcosm. Agricultural Products Department. The Dow Chemical Company. Midland, Michigan.

4. REVIEWED BY: M. A. Mayes, Ph.D.
Aquatic Toxicologist
Health and Environmental Sciences
The Dow Chemical Company

5. DATE REVIEWED: July 19, 1982

6. TEST TYPE: Aquatic Organism: Residue Study

A. Test Species: Ictalurus punctatus (Channel Catfish)

7. REPORTED RESULTS: The bioconcentration factor for picloram is less than one.

8. REVIEWER'S CONCLUSIONS: This study is scientifically sound. Picloram has a bioconcentration factor of less than one and thus will not accumulate in aquatic organisms.

MATERIALS AND METHODS:

Test Material

Picloram (99.6% pure) ^{14}C ring-labeled in the 2 and 6 position. Specific activity 10 mC_i/mM.

Londo sandy loam was used as the substrate. Sample M-65; pH 7.22, organic carbon 2.25%, sand 74%, silt 14%, and clay 12%.

Water

Midland, Michigan city water passed through an "Ozonair" ozone device followed by filtration through activated charcoal. Water characteristics were: temperature 18°C, pH 6.6 and hardness 200 ppm expressed as $CaCO_3$.

Test Organisms

Channel catfish were obtained from Osage Catfisheries, Osage Beach, Missouri. Upon arrival, fish were dip treated in a solution of 150 ppm 37% formaldehyde +0.5 ppm malachite green. The following day the fish were given a second treatment with a solution of 25 ppm formaldehyde and 0.05 ppm malachite green. Fish were held for more than 10 days before use.

Experimental Design

The study was conducted with soil treated at the rate of 1 ppm, 0.1 ppm and an untreated control. The soil was prepared by applying the appropriate amount of ^{14}C picloram in an acetone solution to 2,000 gm of soil. The control was treated with 2 ml of acetone. All samples were mixed in a stainless steel blender for at least 8 hours. Aliquots of mixed soil were frozen and held for analysis. The remaining soil was spread in a 2.5 cm layer in 35-liter aquaria provided with glass covers and aged for 28 days at 22°C.

After aging each aquarium was flooded with 30 liters of water; two days later 60 catfish were placed in each aquarium; each aquarium was aerated by gentle bubbling (1 cc/minute). Exposure lasted 28 days followed by a 28 depuration period.

Fish, water and soil were sampled periodically and analyzed for ^{14}C picloram or metabolites.

Total radioactivity in the water was determined by counting 2 ml aliquots in 18 ml of Aquasol in a Packard 3255 scintillation counter. Soil and fish radioactivity was determined by combusting 1-2 g of soil or whole or sum total parts of fish in a Harvey Biological Materials Oxidizer. Carbon dioxide was trapped in 15 ml of a 2:1 mixture of Carbosorb and Permafluor V prior to scintillation counting.

Picloram in the water was identified by High Performance Liquid Chromatography.

DISCUSSION/RESULTS:

Two control fish died during the course of the experiment. A bioconcentration factor of <1 was determined as a result of this study.

REVIEWER'S EVALUATION:

This study indicates that picloram does not bioconcentrate in the tissue of the channel catfish.

VALIDATION:

Category: Supplemental

Rationale: Test is not required for registration

Repairability: N.A.