

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD

STUDY 3

CHEM 060101

Thiabendazole

§162-2

FORMULATION--00--ACTIVE INGREDIENT

STUDY ID 416318

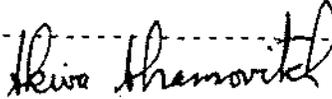
M. Hirsch. 1990. Bioconcentration of ¹⁴C-thiabendazole in Bluegill Sunfish. Unpublished study performed by Environmental Science Section Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY and submitted by Merck and Company, Inc., Rahway, NJ.

DIRECT REVIEW TIME = 8

REVIEWED BY: A. Abramovitch
ORG: US EPA

TITLE: Section Chief

APPROVED BY: A. Abramovitch
TITLE: Section Chief
ORG: EFGWB/EFED/OPP
TEL: 557-1975



SIGNATURE:

CONCLUSIONS:

Bioaccumulation in Fish:

1. This study is acceptable and fulfills EPA Data Requirements for Registering Pesticides by providing information on the bioaccumulation in fish of phenyl ring-labeled [¹⁴C]thiabendazole.
2. [¹⁴C]Thiabendazole did not bioaccumulate significantly in bluegill sunfish within 28 days. Bioaccumulation Factors of 86.5, 19.72 and 747 were obtained for the whole fish, edible and viscera, respectively. Within 3 depuration days, more than 96% of the material in the viscera was removed. Depuration was also significant in the edible portion.

METHODOLOGY:

Phenyl ring-labeled [¹⁴C]thiabendazole (radiochemical purity 98.6%, specific activity 57.4 uCi/mg) was delivered to an aquarium containing filtered lake water to maintain a concentration of 2.32±0.13 ug/L (1/10 the LC/50). The flow rate was 26.7 ml/min and the water temperature was 20 C. 80 bluegill sunfish of 4 gram average

weight were held in test and control aquaria and observed for mortality, behavior, etc. Five fish were collected randomly at 0, 1, 3, 7 and 14, and 28 days and 3 fish were dissected and analyzed for whole fish, viscera and edible portion. Triplicate homogenized fish samples were analyzed by combustion for total radioactivity. Fish samples collected on days 21 and 28 were also homogenized, extracted and analyzed by HPLC in reference to authentic samples of parent and metabolites to identify accumulated residues. Water samples were analyzed by LSC.

DATA SUMMARY:

Bioaccumulation Factors of 86.5, 19.72 and 747 were obtained for the whole fish, edible and viscera, respectively. Samples from days 21 and 28 were analyzed to determine the identity of the accumulated residues. Between 62-77% of the residues in the edible portion were thiabendazole and 18-31% was associated with the 5-hydroxy metabolite. In the viscera, over 80% of the accumulated residues were the 5 hydroxy thiabendazole. Within 3 depuration days, more than 96% of the material in the viscera was removed. Depuration was also significant in the edible portion. Samples in the depuration phase were taken on days 1,3,7,10,12 and 14.

COMMENTS:

1. The study was well conducted, documented and presented. However, a graphical presentation of the accumulation and depuration data should have been made to assist in determining whether an steady state equilibrium was reached in the accumulation phase.
2. Discharge of accumulated material was faster in the viscera than in the edible portion.