Shaughnessy #: 035201

EFB Logout Date: JAN 13 1983

Init:

TO: William Miller
Product Manager # 16
Registration Division (TS-767)

From: L. A. Richardson, Chief
Review Section # 3
Environmental Fate Branch (TS-769)

Attached please find the EFB review of:

Reg./File No.: 201 - 142

Chemical: Dicrotophos

Type Product: Insecticide

Product Name:

Company Name: Shell Oil Co

Submission Purpose: response to Registration Standard

ZBB Code: ?

ACTION CODE: 650

Date in: 11/5/82

EFB # 51

Date Completed: 1/13/83

TAIS (level II

Deferrals To:

46 4

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

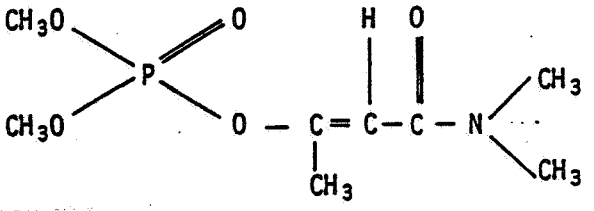
1.0 INTRODUCTION

Chemical Name: Dimethyl phosphate ester of 3-hydroxy-N, N-dimethyl cis-crotonamide.

Common Name: Dicrotophos

Trade Names: Bidrin®, Carbicron®, and EKtafos®

Chemical Structure:



2.0 DISCUSSION

We have reviewed the registrant's comments on EPA's Registration Standard for dicrotophos and concluded as follows for environmental fate data requirements:

163.161-1 Hydrolysis. Under Tab. 2, registrant gave data captioned as being hydrolytic decomposition rates for dicrotophos at various temperatures and pH conditions. Apparently the data were "recapped" from a paper by Brown, et al, which the registrant submitted and which had already been reviewed for the preparation of the registration standard.

The paper by Brown, et al, was found to be scientifically invalid and was unacceptable for use in the standard. Temperature and pH conditions greatly exceeded environmental conditions and the solutions were not maintained in the dark. Hydrolyic products identified from refluxed dicrotophos solutions were not necessarily the same as would be found under natural conditions for hydrolysis.

As to the use of data developed by Lee for the hydrolysis of azodrin, we have concluded bidrin and azodrin differ sufficiently in chemical structure to deny the request that azodrin hydrolysis rate data be accepted for bidrin.

Another reason for maintaining the requirement that a valid hydrolyis rate test be conducted is the fact that the registrant has not provided valid leaching data.

163.161-2,3,4. Photodegradation. Again, EPA does not accept data for azodrin as meeting the requirements for bidrin.

This decision is reinforced by the absence of acceptable leaching data.

163.162-1,2. Aerobic/Anaerobic Soil Metabolism. No new data were provided by the registrant except in the paper by Hall and Sun. Data by those researchers were derived by a method which was non-specific for bidrin. Moreover no effort was made to relate the rate of application in the lab with the recommended rate in the field and there was no evidence of controls being run. Consequently our requirements stated in the standard are unchanged.

163.163-1. Leaching. The work reported by Corey and cited by the registrant was deemed to be scientifically invalid at the time the standard was prepared. Corey's paper dealt with two parameters, viz, aerobic metabolism and leaching. In the metabolism study, incubation conditions and analytical procedures were not included. In the leaching study bioassay procedures were not described. Moreover, the leaching study would not meet our requirements for an "aged leaching study" as specified under 163.164-1.

163.163-2,3. Volatility. Because of the moderately low volatility (vapor pressure $1.0\text{-}1.6 \times 10^{-4}$) stated by the registrant and cited in the technical data bulletin, the use restriction (certified applicators), and the label instructions, we agree to drop the requirement for laboratory and field volatility tests.

163.164-1 Terrestrial Field Dissipation. Footnote 2, page 19, of the registration standard is in error. It should read that at least one additional test must be made on a soil (site) representative of the area of intended use. The research paper reviewed reported data for one soil at one site in the United Kingdom. The requirement for at least two different sites has not been met, and at least one additional test, preferably on a domestic cotton growing soil, must be made.

163.164-5 Long-Term Studies. Because of the demonstrated rapid rate of dissipation of bidrin residues the Agency agrees to delete this requirement.

163.165-5. Field Dissipation Aquatic Non-target. Because of the use pattern and the low octanol/water partition coefficient for bidrin, the Agency agrees to delete the requirement for this test.

Hudson Boyd

Hudson Boyd, Chemist
Environmental Fate Branch
Hazard Evaluation Division (TS-769