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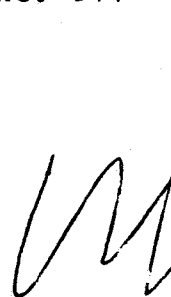
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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: EPA Reg. No. 100-551: Chlordimeform; Amended registration to permit ULV application in oil To cotton. Access. No. 257654 RCB no. 977

FROM: J. Garbus, Chemist 
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Hazard Evaluation Division (TS-769)

THRU: Charles L. Trichilo, Chief
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TO: J. Ellenberger/Edwards PM-12
Registration Division (TS-767)

The Agricultural Division of CIBA-GEIGY, Greensboro, NC has requested an amended registration for its insecticide-ovacide Galecron® 4E (chlordimeform) to permit its use in ULV applications in oil to cotton.

Chlordimeform, [N'-(4-chloro-o-tolyl)-N,N-dimethylformamide], is presently undergoing Special Review as two of its metabolites, 4-chloro-o-formotoluidide, and 4-chloro-o-toluidine have been found to be oncogenic in rodents.

At present the only use of chlordimeform in the United States is on cotton, although in the past it was used on a wide variety of crops for which tolerances were established and never formally rescinded (40 CFR 180.285). In 1976 the product was voluntarily removed from use by its American producers and reintroduced in 1978 with the restriction for its use only on cotton and at lower applications rates. The established tolerance for cottonseed is 5.0 ppm.

Chlordimeform is marketed in two formulations: as a 48.5% emulsifiable concentrate and in the form of its water soluble hydrochloride salt. The label usage directions allow for the application of 1/8 to 1/4 lb a.i./A in a minimum of 1 gallon water/A. Applications may be made on a 3 to 5 day schedule as long as insect eggs of predators are present. There is no restriction as to the maximum number of applications per season. The preharvest interval is 21 days.

The requested amended usage would allow aerial ULV application of the EC formulation at the same rates in 1 quart of cottonseed oil/A.

The major residues of chlordimeform are the parent compound, demethylchlordimeform, 4-chloro-o-formotoluidide, and 4-chloro-o-toluidine. The metabolites arise by successive hydrolytic cleavage of chlordimeform.

The analytical methods that are available determine 4-chloro-o-toluidine after prolonged extraction and hydrolysis of plant material. The reported residue levels thus represent the sum of chlordimeform and its metabolites that can be converted to 4-chlorotoluidine. Metabolites that do not contain this moiety or are resistant to the hydrolysis will not be determined.

An analytical method for enforcement purposes is available for chlordimeform and is published in PAM II. The residue data of the present request were determined using modifications of this procedure. The plant extraction, hydrolytic, steam distillation, and reextraction steps remain the same. In the modification used by CIBA-GEIGY, the 4-chloro-o-toluidine is determined as such by GC using a Hall conductivity detector operating in a halide specific mode. The NOR-AM method involves the bromination of the 4-chloro-o-toluidine which is then determined by GC using an EC detector. The limits of detection are given as 0.03 to 0.05 ppm. Actual recoveries from spiked samples in the CIBA-GEIGY method are reported as 38-60%; The NOR-AM method estimates recoveries as 95% and uses that figure in calculations.

Cotton field trials with ULV in oil applications were conducted in AZ, LA, MI, OK, SC, and TX. Four trials compared the residues after the application of 1/4 a.i. in 2 gallons of water per acre with the residues resulting from the same rate in 1-2 qts. cottonseed oil per acre. In these trials a total of 6 applications were made. Four other trials were conducted with the application of 1/8 lb a.i./A in 1 qt. oil per acre. The number of applications varied from 3 to 6. The chlordimeform was applied alone or as part of a tank-mix with fenvalerate or permethrin. In the direct comparisons, residues at the 21 day PHI in or on cottonseed were 0.13, 0.027, 0.041 ppm for application in water; the corresponding residues from the oil applications were 0.34, 0.021, and 0.038 ppm. In the trials where only oil applications were made residue levels of chlordimeform ranged from 0.019 ppm to 1.1 ppm.

Previous data comparing application in oil with that in water are not available in RCB but are summarized in the Registration Standard for chlordimeform. In 1982, NOR-AM submitted data for chlordimeform residues from tank-mixes with fenvalerate and permethrin applied in oil and water. Eleven applications of 1/8 lbs a.i./A in 1 qt. oil with PHI's of 7-20 days showed non-detectable residues. With water application, residues ranged from 0.08 to 0.24 ppm at PHI's of 8 to 21 days. Another reported trial employed 3 applications of 1/8 lb a.i./A in either 2 qts. oil or 2 gallons of water with PHI's of 21 days. The highest residue levels were found with the water application at 0.05-0.08 ppm. with a value of 0.05 reported for an application in oil. In a third study comparable to those reported here 2 applications of 1/4 lb a.i./A were made in 1 qt. of oil or 3 gallons of water. PHI's ranged from 0 to 19 days and residues were from 0.11 ppm to 0.27 ppm. The Registration Standard concludes that the available

studies support the contention that there are no differences in the level of residues resulting from different modes of application i.e. between conventional low volume water sprays and ULV application in oil. The Registration Standard also concludes that the residue data in general for cottonseed are quite varied and scattered.

The new data for residues of chlordimeform in or on cottonseed submitted with this request also follow these patterns. A comparison of the data generated by CIBA-GEIGY with that of NOR-AM shows a considerable difference between the two sets of data, while the comparison of application in oil to that in water shows no real difference.

Conclusions and Recommendations

No differences were observed in residues resulting from the application of chlordimeform to cotton at registered label rates as either an ULV spray in oil or as an aqueous spray. All available data indicate the adequacy of the currently established tolerance level of 5 ppm. We recommend that that the requested amendment to allow ULV application be approved.

TS-769:RCB:J. Garbus:Edited by Vg:CM#2:Rm708:X557-3043
cc: Amend Use File, S.F., R.F., Circu., PMSD/ISB, Garbus
RDI: A. Rathman, 5/2/84; Schmitt, 5/21/85