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Date Out EFB: 21 JUN 1984

To: Jay Ellenberger
Product Manager 12
Registration Division (TS-767)

From: Samuel M. Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached please find the environmental fate review of:

Reg./File No.: 264-330 and -331

Chemical: Aldicarb

Type Product: Insecticide/nematicide

Product Name: TEMIK

Company Name: Union Carbide

Submission Purpose: Response to questions asked on previously submitted hydrolysis data

ZBB Code: other

Date In: 4/26/84

Date Completed: 21 JUN 1984

ACTION CODE: 336

EAB # 4320, 4321

TAIS (level II)	Days
63	0.5

Deferrals To:

______ Ecological Effects Branch

______ Residue Chemistry Branch

______ Toxicology Branch

1. INTRODUCTION

1.1 Union Carbide has submitted information in response to recent requests for such. Refer to the Feb. 22, 1983 evaluation.

2. DISCUSSION AND COMMENTS

2.1 Points 2A-2E in section 3.2 of the Feb. 22, 1983 evaluation have been satisfactorily answered. See the attached copy of Union Carbide's response.

2.2 The initiation of a new 6-year hydrolysis study is acknowledged.

Samuel M. Creeger
June 21, 1984
Section #1/EAB
Hazard Evaluation Division

UNION CARBIDE AGRICULTURAL PRODUCTS COMPANY, INC.
P. O. BOX 12014, T. W. ALEXANDER DRIVE
RESEARCH TRIANGLE PARK, N.C. 27709

EPA Correspondence No. 131-84
April 10, 1984

U.S. ENVIRONMENTAL PROTECTION AGENCY
Registration Division (TS 767C)
Insecticide/Rodenticide Branch
Crystal Mall Building II - Room 202
1921 Jefferson Davis Highway
Arlington, Virginia 22202

Attn: Jay S. Ellenberger
Product Manager (12)

Re: Your letter of 1/5/84
Pesticide Petition 8F 2096, Food Additive Petition 2H 5347
Aldicarb for Use on Tomatoes

Dear Mr. Ellenberger:

Your letter cited above agrees with our conclusion that residues of aldicarb in tomatoes (treated with TEMIK® in accordance with our proposed label for use in California only) will be adequately covered by a tolerance level of 0.2 ppm for fresh tomatoes and 0.8 ppm for tomato paste. We enclose a revised Section F reflecting these tolerance levels.

Your letter suggested the need for further evidence supporting the conclusion that residues appear to be lower from California trials, possibly due to more rapid soil degradation. I refer you to results of 1983 field dissipation studies with aldicarb in Arizona which indicated a half-life of 7 to 24 days, versus 39 to 46 days for North Carolina and Virginia. These data were submitted to EPA on 4/2/84 in connection with a STANDAK Aldoxycarb petition for tolerance on sweet potatoes and cole crops.

These data support the conclusion that more rapid degradation of aldicarb residues occurs in the West as compared to eastern or northeastern USA, possibly explaining consistently low residues in California grown tomatoes treated with TEMIK®. In addition, one should remember that practically all California grown tomatoes are direct seeded, resulting in a longer time between planting and harvest, and perhaps more importantly, less uptake by a germinating seedling than by a transplant.

Your letter requested additional information about the draft hydrolysis data which was part of my 7/25/83 submission. The responses to these five items are numbered to correspond to the order in which they were listed in your letter.

1. The hydrolysis data were calculated in terms of percent recovery based on the starting concentration of 10 ppm. The starting concentration was established by analysis of the spiked buffer solutions at the start of the experiment. These eighteen analyses are presented as the 0 day results in the three tables of hydrolysis data submitted. The data are corrected for recovery by results from spiked samples run concurrently. Results for aldicarb and aldicarb sulfoxide were also corrected for molecular weight because the analytical procedure required that both be oxidized to aldicarb sulfone for detection by gas chromatography. The equivalent ppm is one tenth the percent presented in the tabulations. For example, in the table of aldicarb sulfone hydrolysis data the 98 percent value for the first item translates to 9.8 ppm.

   This direct percent recovered calculation is illustrated in the attached information from our laboratory notebook No. 17,633 6-PAS for the eighteen samples for the 83 day hydrolysis interval analyzed on 11/20/80. Aldicarb, aldicarb sulfoxide, and aldicarb sulfone are designated as A_0, A_1, and A_2 in this notebook. The molecular weight corrections are 1.17 for aldicarb and 1.08 for aldicarb sulfoxide. Recovery on this day was 101% of a 100 ug aldicarb spike in distilled water.

2. The method used for determination of aldicarb, aldicarb sulfoxide, and aldicarb sulfone in hydrolysis test samples is identified as a <u>Method for the Determination of Aldicarb Residues in Water</u>, March 1980, and designated ALDICARB-FPD-WATER (a). A copy is attached.

3. Test samples were frozen solid at -20°C until analyzed. This storage period varied from one day to about one month with a usual storage time of 1-2 weeks. The water samples were melted by setting the container on the bench at room temperature or, alternatively, in warm tap water to speed melting. The samples were then analyzed promptly upon reaching ambient room temperature. Stability data (see attached study) show aldicarb residues are stable at room temperature for extended periods of time. Additional data from later studies on stability of aldicarb residues in water are attached. These studies extend proof of room temperature stability of aldicarb residues to 82 days and show that two cycles of freezing/thawing of water (at which point the test was terminated) had no effect on contained residues.

4. The pH of the buffer solutions do not change during autoclaving. Identical buffer solutions were prepared and measurements made both before and after autoclaving. There is no discernible effect of autoclaving.

pH of prepared buffer before autoclaving	pH of two autoclaved aliquots of prepared buffer
5.48	5.48, 5.46
7.37	7.38, 7.37
8.50	8.49, 8.50

5. This question refers to a typographical error in the information submitted. The chemical used in preparation of the pH 8.5 buffer solution is sodium tetraborate, $Na_2B_4O_7$, as specified in the reference submitted, Federal Register, Vol. 44, p. 16269, No. 53, Friday, March 16, 1979.

There were some apparent shortcomings in the protocol and completeness of this hydrolysis study which we recognized. Thus, we have initiated a more complete longer term (6 year) study to refine and expand data from the previous study. Because hydrolysis data represents only one facet of aldicarb degradation, field studies such as those conducted on aldicarb in 1983 provide a better overall degradation picture. A copy of our latest Progress Report on this new hydrolysis study is enclosed.

Please let me know if further information or discussion is needed regarding the appropriate tolerance level for aldicarb in tomatoes for use in California only.

Sincerely,

J. S. Lovell

J. S. Lovell, Registration Manager
Insecticides and Intermediates
Registration & Regulatory Affairs

JSL/gb/3018

Enclosures 6: