UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

JAN 27 1989

MEMORANDUM

SUBJECT: PP# 9F3713
Guthion (Azinphos-Methyl) In Or On Almond Meats And Hulls. Evaluation Of Analytical Methodology And Residue Data.

DEB No(s): 4748

FROM: H. Fonouni, Ph.D., Chemist
Dietary Exposure Branch
Health Effects Division (TS-769)

THRU: Charles L. Trichilo, Ph.D., Chief
Dietary Exposure Branch
Health Effects Division (TS-769)

TO: D. Edwards, PM 12
Insecticide-Rodenticide Branch
Registration Division (TS-767)

and

Insecticide-Rodenticide Support
Toxicology Branch
Health Effects Division (TS-769)

The petitioner, Mobay Corporation, is requesting the Agency to amend 40 CFR 180.154 by increasing the current tolerance for the residue of O,O-dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3-(4H)-yl]methyl]phosphorodithioate in/on almond hulls from 10.0 to 20.0 ppm. In addition, a revised use pattern whereby the preharvest interval is reduced from 60 to 28 days has been proposed.

CONCLUSIONS

1. DEB agrees with the revised use pattern contingent upon a label restriction prohibiting grazing of livestocks in the treated fields within 21 days of the last treatment but, presently, recommends against raising the tolerance for residues of O,O-dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3-(4H)yl]methyl]-phosphorodithioate in/on almond hulls from 10.0 to 20.0 ppm. It should be noted that, the deficiencies raised in the Residue Chemistry Chapter of Guthion Registration Standard (4/4/1986) are not pertinent to this revised registration. However, should the Agency alter the tolerance expression as a result of petitioner's response to the deficiencies raised in the Registration Standard, additional information/data might be required.

2. Since the current colorimetric enforcement method for plant commodities, Method II, PAM II, is not specific for the residue of concern, the petitioner should submit a nonconfidential copy of the new gas chromatographic methodology, Method 69523 with Addendum I, to be forwarded to the Agency's Analytical Chemistry Branch for validation and possible inclusion in PAM II. If the GLC method undergoes successful method validation, revision of tolerance for almond hulls would not be required.

RECOMMENDATIONS

DEB agrees with the revised use pattern contingent upon the label restriction reflected in aforementioned conclusion 1 but, presently, recommends against the proposed increase in the tolerance for the subject commodity. The petitioner should submit a nonconfidential copy of the new methodology, Method 69523 with Addendum I, to be forwarded to the Agency's Analytical Chemistry Branch for validation and possible inclusion in PAM II.

DETAILED CONSIDERATIONS

PROPOSED USE

The petitioners's request to amend the use pattern of the insecticide has been addressed previously (memorandums of 2/12/1982 and 9/15/1988 by E. Zager, and K. Dockter, respectively). Notably, upto three applications at the rate of 2lb ai/A may be made instead of two at the rate of 2.5lb ai/A. Further, preharvest interval is to be changed from 60 to 28 days.

Comments:

The petitioner should revise the label prohibiting grazing of livestocks in the treated fields within 21 days of the last treatment, such a restriction is, presently, in effect with the current use pattern.

ANALYTICAL METHODOLOGY

Information/data on this topic was provided in conjunction with a previous submission (memorandum of 2/12/1982). The method is a modification of Method 69523, Gas Chromatographic Method for Determination of Guthion^{R} Residues in Plant Material, which has been discussed in the Guthion Residue Chemistry Chapter. In summary, residues are extracted by chloroform from an aqueous acetone mixture. A modified extraction procedure is employed for oilseed crops. The guthion is separated from the corresponding oxygen analog using a silica gel column and then analyzed by gas chromatography (flame photometric detector in phosphorous mode).

Limit of Detection:
Almond Meat - 0.01 ppm
Almond Hulls - 0.02 ppm

Recoveries: (Fortifications of 0.05 and 0.1 ppm)
Almond Meats and Hulls - 76-88%
Almond Shells - 78-126%

Comments:

The method provided is suitable for determination of guthion/oxygen analog residues in almond meats and hulls. It should be noted that, the current enforcement method for plant commodities, Method II, PAM II, and other methods submitted previously are based on colorimetric determination (Residue Chemistry Chapter of Guthion Registration Standard) of the terminal residue and are nonspecific thereby leading, potentially, to over estimation of the residue of concern; these methods determine combined residues of the parent insecticide and other moieties hydrolyzable to anthranilic acid; a naturally occurring metabolite. The petitioner should submit a nonconfidential copy of the new methodology, Method 69523 with Addendum I, to be forwarded to the Agency's Analytical Chemistry Branch for validation and possible inclusion in PAM II.

MAGNITUDE OF THE RESIDUES

Field residue data have been provided in conjunction with the previous submissions (memorandum of 2/12/1982, pp# 7F0582). The most recent data represent 24 field studies conducted in California in which plants were treated with 3 ground or aerial applications of the insecticide, Guthion 50 WP, at the rate of 2lb ai/A. Almonds were harvested 28 days following the last application. The residues of guthion per se found were reportedly <0.01-0.04 and 0.02-3.58 ppm in/on almond meats and hulls, respectively. The oxygen analog was not detected in the samples (<0.02 ppm). Higher residues have been reported in two previous submissions (pp# 7F0582 and Guthion Residue Chemistry on Almonds, Addition No. 2, 3/12/1979) using colorimetric method of analysis. For example, the residues reported for almond hulls as a result of 3 applications at the rate of 2lb ai/A, 32-33 days after the last application, ranged from 6 to 207.8 ppm, while the residues reported for some controls varied from <0.1 to <4.0 ppm.

Comments:

1. Previously, field residue data generated using the older nonspecific colorimetric as well as the newer gas chromatographic method were considered in the evaluations. However, upon reexamination of all of the available information/data, DEB concludes that the data generated using the latter specific method should more accurately reflect the actual residues of O,O-dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3-(4H)yl]methyl]-phosphorodithioate per se. Using the gas chromatographic method, the maximum residues expected in almond meats and hulls as the result of the proposed use are 0.04 and 3.58 ppm, respectively. If the GLC methodology undergoes successful method validation, the current tolerance for the subject commodity, would adequately cover the expected residues. However, should the Agency alter the tolerance expression following the petitioner's response to the deficiencies raised in the Registration Standard, additional information/data may be required.

cc: Reading File, Circulation, Reviewer (H. Fonouni), PP# 9F3713, TAS, ISB/PMSD (E. Eldredge), FDA.

TS - 769:DEB:Reviewer(HF):CM#2,Rm803:557-7561:typist(hf): 1/13/1989.

RDI:Section Head:JHOnley:1/24/1989:Deputy Chief:RDSchmitt: 1/24/1989.