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

AUG 20 1996

OFFICE OF
PREVENTION, PESTICIDES, AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#6F04664. Isoxaflutole in/on Field Corn. **Results of Petition Method Validation (PMV).** MRID# 435732-51. Barcode D228481. Chemical No 123000. CBTS# 17413.

FROM: G.F. Kramer, Ph.D., Chemist
Tolerance Petition Team I
Chemistry Branch I, Tolerance Support
Health Effects Division (7509C)

THRU: E.T. Haeberer, Acting Branch Chief
Chemistry Branch I, Tolerance Support
Health Effects Division (7509C)

TO: C. Eiden/D. McCall
Registration Section, RCAB
Health Effects Division (7509C)

Rhône-Poulenc Ag Company has proposed permanent tolerances for the preemergent herbicide 5-cyclopropyl-4-isoxazolyl [2-(methylsulfonyl)-4-trifluoromethyl) phenyl] methanone (isoxaflutole, RPA 201772) and its metabolites, 1-(2-methylsulphonyl)-4-trifluoromethylphenyl-2-cyano-3-cyclopropyl propane-1,3-dione (RPA 202248) and 2-(methylsulphonyl)-4-trifluoromethyl benzoic acid (RPA 203328) in/on the raw agricultural commodities (RACs) as follows:

Field Corn, Grain -- 0.10 ppm ¦ Field Corn, Fodder -- 0.40 ppm
Field Corn, Forage -- 0.40 ppm

On 2/14/96, CBTS requested that ACL perform a PMV on the following method:

Analytical Method for the Determination of Residues of RPA 201772, RPA 202248, and RPA 203328 in Corn Grain and Fodder. Appendix B of MRID# 435732-51.

The results of the PMV and the TMV Pre-review are appended to this memorandum as Attachments 1 & 2.

Results

The average recovery in corn grain was 85.2 ± 10.0%; in corn forage, was 92.5 ± 6.0%; and in corn fodder, was 89.6 ± 18.8%. One analyst can extract and clean-up six samples in 3 days.

Conclusions

The recoveries of isoxaflutole are acceptable. The following comments were made by ACL in the PMV results (Memo, E. Greer, Jr. 7/23/96):

1) The isoxaflutole standard is not available from the EPA repository in RTP. The petitioner should also confirm the availability of the GC standard.

2) Sources and catalog numbers should be added for the apparatus needed to prepare the diazomethane solution.

The following additional comments were made by ACL in the TMV Pre-review (Memo, E. Greer, Jr. 3/11/96):

3) Section 4.2.4 should be modified to include the procedure for stirring the mixture in tube (B) and for the assembly of the acetic acid trap in Fig. 3.

4) In Section 5, at least two confirmatory ions should be included.

5) The petitioner should demonstrate that a feasible alternative to diazomethane is not available or modify the method to substitute a different derivatizing reagent.

This method will be suitable for enforcement purposes once the revisions recommended by ACL are incorporated.

Recommendations

The registrant should submit standards of isoxaflutole (conclusion 1) to the EPA repository in RTP along with the MSDS, and a revised version of the proposed analytical enforcement method as specified in conclusions 2-5 and the Repository ordering codes for the standard to CBTS. Until the receipt of the standard and the revised method, the requirements for analytical enforcement methodology will remain unfulfilled.

Attachment 1- Memo, E. Greer, Jr. 7/23/96
Attachment 2- Memo, E. Greer, Jr. 3/11/96

cc (with Attachments): M. Clower (FDA, HFS-335), D. Kenny/J. Miller (RD, 7505C)
cc (w/o Attachment): PP#6F04664, S.F., Kramer, Circ., R.F., H. Hundley (7503W)
RDI: TPT1 (8/15/96), E.T. Haeberer (8/20/96), R.A. Loranger (8/19/96)
G.F. Kramer:804V:CM#2:(703)305-5079:7509C:CBTS

ATTACHMENT 1

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

Analytical Chemistry Section
Building 306, BARC-East
Beltsville, Maryland 20705

JUL 23 1996

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#5G04484 & PP#6F4664. Report on Method Validation of Isoxaflutole in/on Corn Fodder, Forage and Grain.

FROM: Everett S. Greer, Jr., Team Leader
Dallas P. Wright, Jr., Chemist
Analytical Chemistry Section

THRU: Harvey K. Hundley, Head
Analytical Chemistry Section

THRU: Donald A. Marlow, Chief
Analytical Chemistry Branch

To: E. Zager, Acting Chief,
Chemistry Branch I, Tolerance Support
Health Effects Division (7509c)

INTRODUCTION

The Analytical Chemistry Laboratory was requested by the Chemistry Branch I, Tolerance Support to conduct a method trial on the herbicide 4-(methanesulphonyl-4-trifluoromethylbenzoyl)-5-cyclopropyl isoxazole (RPA 201772) and its metabolites RPA 202248 and RPA 203328 on corn fodder, forage and grain. ACL used the method entitled "EXP 30953B/Field Corn/Magnitude of Residue (US93702R): Analytical Method for the Determination of Residues of RPA 201722, RPA 202248, and RPA 203328 in Corn Forage, Silage, Grain, and Fodder" for the following corn commodity/analyte levels:

Commodity	Analyte	Level
Fodder	RPA 201772	0.01, 0.2, 0.4 ppm
Forage	RPA 201772	0.01, 0.2, 0.4 ppm
Grain	RPA 201772	0.01, 0.2, 0.4 ppm
	RPA 202248	0.01 ppm
	RPA 203328	0.01 ppm

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METHOD SUMMARY

RPA 201772 and its metabolites are extracted with methanol, and RPA 201772 is hydrolyzed to RPA 202248 with sodium hydroxide. The methanol is evaporated, and the extract is cleaned up by liquid-liquid partitioning, acidified with HCl and extracted with dichloromethane to allow partitioning of RPA 202248 and RPA 203328. Residues of RPA 202248 are hydrolyzed with methanolic sodium hydroxide to RPA 203328. After partitioning with dichloromethane the combined RPA residues are derivatized with diazomethane to the methyl ester (RPA 204497) for quantification by gas chromatography with mass selective detection.

COMMENTS

1. In a conversation between ACL personnel and George Kramer of CBTS, it was decided that it would be unnecessary to validate this common moiety method for the metabolites of RPA 201772 at the 0.2 ppm and 0.4 ppm levels as was originally requested if ACL can demonstrate that the method performs well for the these compounds at the 0.01 ppm level.

2. An ethereal diazomethane solution prepared with an Aldrich kit was used in place of the dichloromethane solution used in the method for the derivatization step. ACL made this substitution because the glassware for preparing the dichloromethane solution was not well described. The ILV report stated that the independent validation laboratory also used an ethereal solution. Sources and catalog numbers should be included in the method for the apparatus needed to prepare this reagent.

3. The standards for this method trial were acquired from Rhône-Poulenc Ag. The EPA repository has the isoxaflutole metabolites, but not the parent compound in its inventory. At this time the availability of the GC standard is not known. ACL has requested this information but has not received a response from RTP.

4. The Limits of detection and quantitation were estimated at 0.3 ppb and 1 ppb respectively.

5. A set of six samples can be extracted, cleaned up and injected into the MSD system in three working days.

6. This method meets the requirements for a tolerance enforcement method as described in the Pesticide Assessments Guidelines, Subdivision O, Section 171-4 (b) provided the comment concerning diazomethane preparation and the comments noted in the method pre-review are addressed.

Commodity	Chemical Added	PPM Added	PPM Found	Percent Recovery
Corn Fodder	Isoxaflutole	Control	N.D.*	-
		Control	N.D.	-
		0.01	0.00944	94.4
		0.01	0.0110	110
		0.2	0.141	70.5
		0.2	0.129	64.5
		0.4	0.362	90.5
		0.4	0.433	108
Corn Forage	Isoxaflutole	Control	N.D.	-
		Control	N.D.	-
		0.01	0.00817	81.7
		0.01	0.00959	95.9
		0.2	0.195	97.5
		0.2	0.195	97.5
		0.4	0.364	91.0
		0.4	0.366	91.5
Grain	Isoxaflutole	Control	N.D.	-
		Control	N.D.	-
		0.01	0.00912	91.2
		0.01	0.0101	101
		0.2	0.167	83.5
		0.2	0.164	82.0
		0.4	0.291	72.8
		0.4	0.303	75.8
	RPA 203328	0.00985	0.00833	84.6
		0.00985	0.00931	94.5
	RPA 202248	0.0102	0.00731	71.7
		0.0102	0.00969	95.0

* N.D. = Less than the estimated LOD of 0.3 ppb

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Modifications to method (major or minor):

See Comments section of report.

Special precautions to be taken:

None

Source of analytical standards:

Rhône-Poulenc Ag

If derivatized standard is used, give source:

Rhône-Poulenc Ag

Instrumentation for quantitation:

GC/MSD

Instrumentation for confirmation:

N/A

If instrument parameters differ from those given in method, list parameters used:

All parameters as per method except initial inlet pressure was reduced from 25 psi to 20 psi to prevent auto shutdown.

Commercial sources for any special chemicals or apparatus:

N/A

Additional comments:

See report.

Chromatograms
Copies attached

ATTACHMENT 2

TMV Pre-review of Isoxaflutole
in Corn

Reviewed by: Everett S. Greer, Jr. ESG

Date: 3-11-96

Laboratory assignment number: B96-20,21,22,23

Analytes: Isoxaflutole, RPA 202248 and RPA 203328

Commodities: Corn grain, fodder and forage

Petitioner: Rhône-Poulenc

Independent validation laboratory: ABC Laboratories,Inc., Pan-Ag Division

Method: Analytical Method for the Determination of Residues of RPA 201772, RPA 202248, and RPA 203328 in Corn Grain and Fodder

4.2 Preparation of reagents

4.2.4 Preparation of diazomethane

The procedure for stirring the mixture in tube (B) and the assembly of the acetic acid trap in Figure 3 should be described.

5. Gas chromatographic conditions

This section lists only one qualifying ion to be monitored by the MSD. A tolerance enforcement method should include at least two confirmatory ions.

Additional reviewer's comments

1. This method uses diazomethane for derivatizing the hydrolyzed analytes. Due to safety concerns it is the agency's policy that analytical methods submitted in support of registration must use an alternate derivatizing reagent unless the registrant can show through submitted data that a feasible alternative is not available. There is no discussion of the registrant's attempt at trying alternative derivatizing reagents in any of the documents sent to ACL from CBTS.

2. The registrant has provided mean recovery data with the method for corn grain, forage and fodder fortified with the three requested analytes at the 0.01 ppm and 0.05 ppm levels. No individual recovery data are included. Representative chromatograms are included for the three analytes at the lowest level requested by CBTS.

3. Satisfactory recovery data were reported in the independent laboratory report for corn grain fortified at the 0.05 ppm, 0.1 ppm and 0.5 ppm levels. Representative chromatograms were also included in the report.

4. The ILV found that GC/MS linearity and reproducibility were affected when silanized glass wool was not used in the GC injection liner.

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ANALYTICAL CHEMISTRY BRANCH
SCREEN FOR RESIDUE METHODS FOR TMV

1. LABORATORY ASSIGNMENT NUMBER: B 96-20, 21, 22, 23
   5G04484
2. PP#: 6F04664
3. TECHNICAL REVIEWER: Everett S. Greer, Jr.
4. DATE: 6-11-96
5. ANALYTES/LEVEL: Isoxaflutole, RPA 202248, RPA 203328 / 0.01, 0.10, 0.20, 0.40 ppm
6. COMMODITIES: Corn grain, fodder, forage
7. METHOD: Exp 30953B / Analytical Method for the Determination of Residues of RPA 201772, RPA 202248, and RPA 203328 in Corn Grain and Fodder

The Analytical Chemistry Section has been asked to screen the residue chemistry methods submitted by the registrant in order to determine if they contain the essential requirements identified in the Residue Chemistry Guidelines. Full scientific review and laboratory evaluation of those methods will take place after the initial screen. The following items need to be resolved before the analytical method can be evaluated.

	YES	NO
1. Does the method use exotic equipment and/or supplies that are not commercially available in the U.S.?		✓
2. Does the method require any new equipment before the laboratory work begins?		✓
3. Are chromatograms included?	✓	
a. Is (are) peak(s) of interest sufficiently resolved from other peaks?	✓	
b. Has registrant included chromatograms of analyses at or below tolerance on all crop types for which tolerance is requested by HED?	✓	
c. Do the control samples have reasonably low levels of the analyte in relation to the proposed tolerance?	✓	
d. Is the method sufficiently sensitive and specific to measure and identify the residues at levels specified by HED in the TMV request?	✓	

	YES	NO
4. Has recovery data been provided to ACL for the residues that are specified in the TMV request?	See narrative review	
5. Are recovery values between 70% and 120% at all levels and for all commodity types?	✓	
6. Are all procedures clearly written with no ambiguities so that the method can be run without communication with the registrant?	✓	
7. Does the method require correction for a sample of the untreated commodities or a blank?		✓
8. Does the method require the use of an internal or procedural standard to compensate for lost analyte during analysis?		✓
9. Are 2nd laboratory validation data provided with the method?	✓	
10. Are there any deficiencies other than those covered above that would prevent ACS from conducting a method trial?		✓
11. Is this method suitable for validation testing?	✓	

Any deficiencies/problems noted for any above items should be addressed in the full scientific review of this method to be attached as an addendum.

Robert S. Steel — Signature

3-11-96 — Date

The following is to be completed by the analyst performing the TMV.

12. Can a set of 6 samples be run within 24 hours?	✓	
13. a. Are standards available at RTP repository?	See report	
b. Are derivatized analytical reference standards available?	N/A	