UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS
ENVIRONMENTAL CHEMISTRY LABORATORY
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May 19, 2010

MEMORANDUM

SUBJECT: Flutriafol - ECM0246W1 DP # 340361

FROM: Elizabeth Flynt, Primary Reviewer
BEAD/Environmental Chemistry Laboratory

THRU: Joseph Ferrario, Branch Chief
BEAD/Environmental Chemistry Laboratory

TO: Margaret Ervin ECM Gatekeeper
OPP/Environmental Fate and Effects Division
EIS Branch (7507C)

The EFED/Environmental Fate and Effects Division has requested an Environmental Chemistry Method Review of a method for the determination of Flutriafol in water (MRID No.470903-13). The method was submitted by Cheminova A/S in accordance with the registration of the above mentioned analyte. The method validation data was reviewed and the conclusions included in the attached Environmental Chemistry Method Review Report.

The following report includes an overview of the method and the method completeness, statements of adherence to EPA regulations, a presentation of results and a discussion of problems found in the registrant method. A statement of method acceptability is also included.

If you have any questions concerning this report, please contact Elizabeth Flynt at (228) 688-2410 or me at (228) 688-3212.

Attachments
cc: Dr. Christian Byrne, QA Officer
BEAD/Environmental Chemistry Laboratory

Elizabeth C. Flynt
BEAD/ECL

Flutriafol in Water/128940/Cheminova/67760

ENVIRONMENTAL CHEMISTRY METHOD REVIEW REPORT

Data Requirement: PMRA Data Code: NA
EPA DP Barcode: 340361
Data Point: NA
EPA Guideline: ECM Method Review

Test material:
Common name: Flutriafol
CAS name: α-(2-fluorophenyl)-α (4-fluorophenyl)-1*H*-1,2,4-triazole-1-ethanol
IUPAC name: (*RS*)-2,4'-difluoro-α- (1*H*-1,2,4-triazol-1-ylmethyl)benzhydryl alcohol

Primary Evaluator: Elizabeth Flynt **Date:** 4/19/10
Elizabeth Flynt, Chemist

Peer Reviewer: **Date:** 4/19/10
Dr. Jeremy Stewart, Chemist

QA Officer: **Date:** 4/19/10
Dr. Christian Byrne, QA Officer

ANALYTICAL METHOD: MRID No.470903-13, February 23, 2007, "Amended Report: Analytical Method Verification for the Determination of Flutriafol in Freshwater and Saltwater", Pages 1-66. The unpublished method was sponsored by Cheminova Inc. The method was developed and verified by Wildlife International, Ltd. located in Easton, Maryland. No independent laboratory validation was submitted.

EXECUTIVE SUMMARY

The method is applicable for the quantitative determination of residues of Flutriafol in water. The method was created in accordance with EPA's Good Laboratory Practice Standards, Title 40 Code of Federal Regulations Part 160. After a thorough review, ECB determined that Environmental Chemistry Method 0246W1 (Flutriafol) did not comply with the OPPTS 850.7100 Data Reporting Guidelines.

Method Summary

Concentrations of Flutriafol in freshwater and saltwater were determined by direct injection and analysis using High Performance Liquid Chromatograph (HPLC) equipped with a Variable Wavelength detector.

The Limit of Quantitation (LOQ) was reported as 0.02 mg/L for all analytes.

ENVIRONMENTAL CHEMISTRY METHOD REVIEW REPORT

METHOD ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS

The main deficiencies of this ECM for the detection of Flutriafol in water is the lack of an Independent Laboratory Validation and insufficient tabular data to validate and confirm the results.

Lesser deficiencies include the following:

The registrant stated that the Limit of Quantitation was based upon the product of the concentration of the lowest calibration standard and the dilution factor of the matrix blank samples. The OPPTS Guidelines 850.7100 Ecological Effects Test Guidelines state that the LOQ is defined as the level above which quantitation results may be obtained. It appears that the registrant selected the stated LOQ level arbitrarily, not scientifically and ECB, therefore, finds the explanation deficient.

Also, the lowest level that was validated at 0.04 mg/L is 2 times the LOQ (0.02 mg/L) stated in the method. In addition, there is no statement of a Method Detection Limit (Limit of Detection).

Another deficiency was the lack of an analytical confirmatory method as the analytical method is HPLC/UV. As stated in the OPPTS 850.7100 guidelines, methods of detection other than LC/MS or GC/MS, which do not require a confirmatory method due to the innate specificity of the analytical technique, require a confirmatory method.

After a thorough review, ECB determined that this method is not compliant with the OPPTS Guidelines (OPPTS 850.7100 Ecological Effects Test Guidelines) primarily due to the lack of an ILV and tabulated data for sample calculations.

COMPLIANCE

Signed and dated statements that this method was conducted in accordance with the requirements for Good Laboratory Practice Standards, 40 CFR 160 are present in this method. A statement of non-confidentiality was present on the basis of the method falling within the scope of the FIFRA Section 10 (d)(1)(A), (B), or (C).

A. BACKGROUND INFORMATION

Flutriafol is a contact and systemic fungicide with eradicant and protective action. It is used to control a broad spectrum of leaf and ear diseases in cereals. It is also used in non-mercurial seed treatment formulations to control the major soil-borne and seed-borne diseases of cereals.

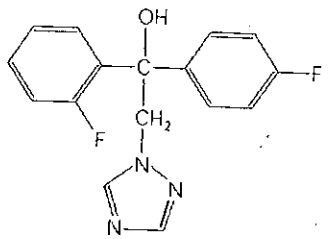
TABLE A.1. Test Compound Nomenclature for Flutriafol	
Compounds	**Chemical Structure** Flutriafol 
Common names	Flutriafol
Company experimental name	Not available
IUPAC name	(*RS*)-2,4'-difluoro-α-(1*H*-1,2,4-triazol-1-ylmethyl)benzhydryl alcohol
CAS Name	α-(2-fluorophenyl)-α (4-fluorophenyl)-1*H*-1,2,4-triazole-1-ethanol
CAS #	76674-21-0

TABLE A.2. Physicochemical Properties of the Technical Grade Test Compound	
Parameter	**Value**
Melting point/range	White colorless crystalline solid with a low volatility
pH	5-6
Density	1.06
Water/Buffer solubility	0.18 g/L@pH 4, 0.13 g/L @pH7, 0.13 g/L@pH9
Solvent solubility	Soluble in acetone and dichloromethane. It is sparing soluble in hexane.
Vapour pressure	7.1 x 10^{-6} mPa @ 20 °C
Dissociation constant (pK_a)	(pK_a)2.3 at 25°C
Octanol/water partition coefficient, Log(K_{OW})	Log P_{ow} 2.3 at 20 °C
UV/visible absorption spectrum	Not available

MATERIALS AND METHODS

B.1. Principle of Method

Well water was fortified, passed through a sand filter and prior to use, filtered to 0.2 µm in order to remove microorganisms and fine particles. Samples are fortified, diluted in freshwater, and analyzed by HPLC coupled with UV detection.

TABLE B.1.1.	Summary Parameters for the Analytical Method Used for the Quantitation of Chemical Residues in Matrices Studied
Method ID	ECM0246W1
Analyte(s)	Flutriafol
Extraction solvent/technique	No extraction, direct injection
Cleanup strategies	Filtration
Instrument/Detector	Agilent Series 1100 HPLC with an Agilent Series 1100 Variable Wavelength Detector

RESULTS AND DISCUSSION

C.1. Recovery Results Summary

TABLE C.1.1. Flutriafol Summary at LOQ					
	Freshwater			Saltwater	
Compound	**Fortification Level**	**% Recovery**	**RSD**	**% Recovery**	**RSD**
Flutriafol	0.04 mg/L	98.9	1.03	101	0.629
	0.4 mg/L	98.6	0.406	99.4	0.660

TABLE C.1.2. Method Characteristics	
Analyte	Flutriafol
Limit of Quantitation	0.0200 mg/L
Limit of Detection (LOD)	Not provided
Accuracy/Precision at LOQ	**See Table C.1.1. above.**
Reliability of the Method/ [ILV]	No ILV was submitted with this method.
Linearity	The regression equation had a coefficients of determination of 0.99989
Specificity	This method lacked specificity as it was analyzed via LC/UV and had no confirmation method.

C.2. Independent Laboratory Validation (ILV)

There was no Independent Laboratory Validation submitted with this method.

D. CONCLUSION

From a review of the method, "Amended Report: Analytical Method Verification for the Determination of Flutriafol in Freshwater and Saltwater.", ECB concludes that the method is not compliant with the requirements of the OPPTS 870.7100 Guideline for the determination of the residues of Flutriafol in water primarily due to the lack of an Independent Laboratory Validation and the lack of sufficient data to confirm the results of the registrant method.