December 6, 1994

RIN # 1132-02
43452101

MEMORANDUM:

Subject: Product Chemistry Review on Etofenprox
EPA File Symbol: 33657-A

From: Bipin Gandhi, Chemist
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12/15/94.

Requestor: MITSUI TOATSU CHEMICALS INC.

DP BARCODE: D209769

EPA File Symbol: 33657-A

EPA MRID No.: 434521-01

Pesticide Chemical Code: 128965

Company Code No.: 033657

Chemical Name: [2-(4-Ethoxyphenyl)-2-methylpropyl-3-phenoxybenzyl ether]

Common/Trade Name: Etofenprox

Introduction: This is a supplementary review. See original reviews dated 5/21/90 and 3/6/89 both by Alston. This review contains only the analytical methods and submission of a new CSF. This review only addresses the technical product and not the products derived from it. ~~unfortunately~~ previous reviews reports several products which are I believe are MPs and EPs derived from the technical.

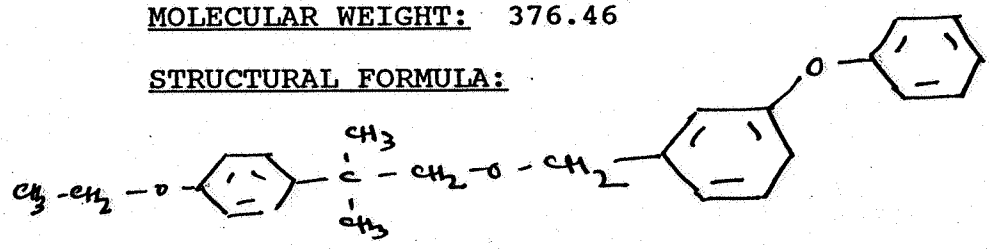
SERIES 61: Product Identity and Composition

61-1 Product Identity and Disclosure of Ingredients

CAS REGISTRY NUMBER: 80844-07-1

MOLECULAR WEIGHT: 376.46

STRUCTURAL FORMULA:



SERIES 62: Analysis and Certification of Product Ingredients

62-2 Certification of Ingredient Limits

The ~~new~~ CSF is submitted and and reported the label claim as the nominal concentration.

62-3 Analytical Methods to Verify Certified Limits

See attached method for the active ingredient. The analytical method for the active ingredient method is acceptable and no additional information is required. Upon review of the provious reviews it appears that the analytical methods to determine impurities are not submitted. If so, then they are required. If submitted earlier then MRID numbers must be submitted for the same.

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PROCEDURE

(a)Operating condition:

Temperature

column oven	230 C
injection port	270 C
detecter	270 C

Carrier gas flow rate

Nitrogen	50 ml/min
Hydrogen	40 ml/min
Air	500 ml/min

Injection volume 1 ul

Retention time

etofenprox	19.0 min
di-cyclohexyl phtalate	9.5 min

Chart speed 5 mm/min

(b)Preparation of sample Weigh (to the nearest 0.1 mg) into a volumetric flask (100 ml) enough sample to contain about 120 mg of pure etofenprox (w mg). Add by pippete internal standard solution (20 ml) and dilute to the volume with cyclohexane.

(c)Determination Inject the calibration solution (1 ul) untill the peak area ratios of etofenprox to di-cyclohexyl phtalate for two successive injections vary less than 1%. Then inject an i ul portion of the calibration solution followed by duplicate injections of an 1 ul portion of the sample solution, and another 1 ul portion of the calibration solution. Obtain the peak area rations of etofenprox to di-cyclohexyl phtalate. Average the peak area ratios of the sample the solution injections (R') and also of the calibration solutions (R') preceding and following the sample injections.

(d)Caluculation

$$\text{Etofenprox content} = \frac{R \times s \times P}{R' \times w} \quad (g/kg)$$

where:

s = mass of etofenprox standard in the calibration solution (mg)

w = mass of sample taken

R'= average peak area ration of etofenprox to di-cyclohexyl phtalate for the calibration solution

R = average peak area ratio of etofenprox to di-cyclohexyl phtalate for the sample solution

P = purity of etofenprox standard (g/kg)

Repeatability r =5.59 to 7.67 g/kg at 1000g/kg active ingredient content

Reproducibility R =16.10 to 16.68 g/kg at 1000g/kg active ingredient content

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ETOFENPROX TECHNICAL
*471/TC/M/-

1 Sampling. Take at least 100 g

2 Identity test.
GLC Use the GLC method below. The relative retention time of etofenprox should not deviate by more than 2% from that of the caliblation solution.

3 Etofenprox
OUTLINE OF METHOD Etofenprox is dissolved in cyclohexane contaning di-cyclohexyl phtalate as internal standard. The content of etofenprox is determined by GLC with a flame ionization detecter.

REAGENTS
Cyclohexane analitical grade
Di-cyclohexyl phtalate pure (internal standard)
Etofenprox pure
Nitrogen pure
Hydrogen pure
Air
Internal standard solution Weigh into a volumetric flask (200ml) 1000 mg of di-cyclohexyl phtalate. Dissolve in cyclohexane 50 ml and dilute to the volume with cyclohexane.
Caliblation solution Weigh into (to the nearest 0.1 mg) a glass-stoppered conical flask (100 ml) 120 mg (s mg) of standard etofenprox.

APPARATUS
Gas chromatograph equipped with a flame ionization detector and an on-column injection port.
Column glass, 2.0 m x 3 mm (i.d.) paced with 5% silicone AN-600 on Chromosorb W-HP 60-80 mesh/
Integrator automatic digital integrator
Microsyringe 10 ul

* CIPAC method 1993. Prepared by the Japanese committee (JAPAC), Chairman T. Sazuki. Based on a method supplied by Mitsui Toatsu Chemical. Inc, Japan.

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Conclusions and Recommendations

SERIES 62: Analysis and Certification of Product Ingredients

The analytical method for the active ingredient method is acceptable and no additional information is required. Upon review of the provious reviews it appears that the analytical methods to determine impurities are not submitted. If so, then they are required. If submitted earlier then MRID numbers must be submitted for the same.