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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

TXR NO. 0050764

MEMORANDUM

DATE: May 16, 2002

SUBJECT: MARC Decision Memo for 4/17/02 Meeting on Lambda-Cyhalothrin: Residues of Concern in Drinking Water
Chemical # 128897 DP Barcode D282893 Case # 292497
Submission # S574546

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THRU: Donna Davis, Branch Chief Donna S Davis
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And
Christine Olinger, Chair
Metabolism Assessment Review Committee
Health Effects Division (7509C)

TO: Yan Donovan, Executive Secretary
Metabolism Assessment Review Committee
Health Effects Division (7509C)

The Metabolism Assessment Review Committee discussed data on the degradation of lambda-cyhalothrin in laboratory and field studies to determine the residues of concern in drinking water. **The conclusion was that the parent compound plus degradate XV (parent hydroxylated in the 4-position of the phenoxy ring) should be included in the drinking water assessment.**

Rationale for MARC Conclusions

Both the acute and chronic dietary endpoints for lambda-cyhalothrin are based on clinical signs of neurotoxicity such as ataxia and gait abnormalities. With respect to carcinogenicity, it falls in in Group D (not classifiable). The fate studies showed three major degradates could be formed by lambda-cyhalothrin in the environment (MARC MEETING QUESTIONNAIRE, Iwona Maher, 4/16/02). The Committee's deliberations on each of these are detailed below.

Degradate Ia:

This degradate is the cyclopropanecarboxylic acid portion of the molecule formed by hydrolysis of the ester linkage [full name: (1RS)-cis-3-(ZE-2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylic acid]. It was a major degradate (>10% of applied material) in four laboratory studies. Based on its structure, the MARC concluded it would not be of significant concern with respect to the neurotoxicity endpoint on which the dietary risk will be assessed. Although other possible toxicological properties of Ia are not known, any potential concerns are mitigated by its expected low levels in water, its high polarity and its ability to be conjugated and excreted from the body (due to the presence of the carboxylic acid group).

Degradate V:

This degradate is 3-phenoxybenzoic acid and, like Ia, does not possess the intact ester function of the parent insecticide. It was a major degradate in the aquatic photolysis study and is likely to be formed by hydrolysis (followed by oxidation). Using the same rationale as presented for Ia, the Committee concluded that this compound need not be included in the drinking water assessment. It was specifically noted that V was found as a metabolite in a dog study and was conjugated and excreted.

Degradate XV:

This degradate still includes the ester linkage and is formed by hydroxylation of the 4-position of the phenoxy ring. It was a major degradate in the aerobic soil metabolism study. In the absence of toxicological studies for this compound, the MARC concluded it is likely to possess similar toxicity to the parent (including the neurotoxicity endpoints) based on its structure (i.e., still possessing the ester group). Therefore, the Committee concluded it should be part of the drinking water residue of concern.

MARC attendees: Chris Olinger, Alberto Protzel, Abdallah Khasawinah, David Nixon, Bill Wassell, Norman Birchfield, Leonard Keifer, Leung Cheng, Yan Donovan, Rick Loranger

Other attendees: Pamela Hurley, Santhini Ramasamy

cc: RAB2 RF, P. Hurley, R. Loranger, G. LaRocca-RD (7505C)

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Chemical:	**ALPHA-CYANO-3-PHENOXYBENZYL-3-(2-CHLORO-**
PC Code:	**128897**
HED File Code	***21400 MARC***
Memo Date:	**05/16/2002**
File ID:	**TX050764**
Accession Number:	***412-03-0018***

HED Records Reference Center
11/12/2002