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8M 07/OPP#34133 (3PP)

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OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: ETHION RISK MITIGATIONS: ADDENDUM TO THE ETHION  
REREGISTRATION ELIGIBILITY DOCUMENT

TO: Robert Richards, Chemical Review Manager  
Reregistration Section 2  
Reregistration Branch  
Special Review and Reregistration Division (7508W)

FROM: Laura E. Morris, Acting Section Head *Laura E. Morris*  
Reregistration Section

THRU: Larry C. Dorsey, Chief *Larry C. Dorsey*  
Occupational and Residential Exposure Branch  
Health Effects Division (7509C)

Please find below the OREB review of:

DP Barcode: D211512

Pesticide Chemical Code: 058401

EPA Reg. Nos.: 279-01254; 51036-00089; 51036-00090

PHED: Yes

**I. Introduction**

OREB has been requested by SRRD to provide additional information as a result of the meeting with FMC regarding the Ethion Reregistration Eligibility Document (RED). The registrant has proposed several risk mitigation techniques which OREB has been requested to consider in its evaluation of potential exposure/risk to workers. In addition, the registrant has requested copies of the study reviews conducted by OREB, as noted in the Ethion RED.

**II. Detailed Considerations**

The registrant has proposed to reduce the maximum application rate to 2.5 lbs ai/acre and to use enclosed cabs for airblast applications. Below is a summary of the exposure assessment using surrogate exposure values from the Pesticide Handlers Exposure Database:

Mixer/loaders wearing normal work clothing and chemical resistant gloves using a closed system would be exposed to 0.026 mg/kg/day [based on the unit dermal exposure value of 0.009 mg/lb ai using 16 - 31 acceptable grade replicates from PHED: Assumptions - max. label application rate is 2.5 lb/ai acre with a daily maximum of 80 acres treated/day.]

Applicators (wearing normal work clothing and chemical resistant gloves) in enclosed cabs during airblast applications would be exposed to 0.012 mg/kg/day [based on the unit dermal exposure value of 0.02 mg/lb/ai using 20 - 30 Grade C replicates from PHED: Assumptions - max. label application rate is 2.5 lb/ai acre with a daily maximum of 17 acres treated/day.]

Foliar dislogdeable residue data for ethion were used to determine the appropriate restricted entry interval. Reentry calculations were extracted from "Margin of Safety Risk Assessment Based on Surrogate Exposure Models for Workers Reentering Citrus Treated with Ethion Insecticide/Miticide, Revision 1" from Nigg, 1977 by Doug Baugher (MRID No. 45089-01). Residues for ethion and the oxon of ethion were considered in the study. Using a Margin of Exposure of 100 the recommended restricted entry interval for total residues (ethion and the oxon) is 21 days after application (based on the NOEL of 0.8 mg/kg/day).

**III. Conclusions/Recommendations**

As indicated in the Toxicology Selection Endpoint Document dated 3/14/94 from Tox 2/HED, the toxicological endpoint to be used for both short term and intermediate term occupational or residential exposure is 0.8 mg/kg/day based on a 21 day dermal

rabbit study. Based on the indicated NOEL, the estimated Margins of Exposure are as follows:

MOE = 31 for the mixer/loader exposed to 0.026 mg/kg/day  
MOE = 66 for the applicator performing an airblast application in an enclosed cab (exposed to 0.012 mg/kg/day).

The recommended **Restricted Entry Interval is 21 days after application.**

The study reviews as requested by the registrant will be submitted to SRRD in a separate memorandum.

cc: Laura Morris/OREB  
Esther Saito/7508W  
Linda Kutney/7509C  
Correspondence File  
Chemical File