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

MAY 15 1996

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Soil Residue Dissipation, Dermal Passive Dosimetry and Inhalation  
Passive Dosimetry Exposures - Waiver Request for Carbofuran Use on  
Potatoes

FROM: Olga Odiott, Biologist

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TO: Margaret Rice  
Special Review and Reregistration Division (7508W)

THRU: Francis Suhre, Acting Section Head  
Reregistration Section  
Occupational and Residential Exposure Branch

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

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Please find below, the OREB review of:

DP Barcode: D221477

Pesticide Chemical Code: 090601

EPA Reg. No.: N/A

EPA MRID No.: 438420-01

## I. INTRODUCTION:

FMC corporation is requesting waivers for soil residue dissipation and dermal and inhalation post-application exposure data requirements (Guidelines 132-1B, 133-3 and 133-4) for carbofuran uses on potatoes. The data were requested in the March, 1992 Data Call-In Notice for carbofuran.

Carbofuran is a carbamate insecticide/nematicide registered for use on a variety of agricultural and ornamental crops where worker post-application exposure can be expected. Carbofuran is classified in category I for acute oral, acute dermal and acute inhalation toxicity.

## II. DETAILED CONSIDERATIONS:

FMC maintains that due to potato cultural practices it is unlikely that detectable dermal and/or inhalation exposures will result from post-application activities, including harvesting:

- = 14-day preharvest interval and 48 hr REI
- = Cultural practices during the period of carbofuran use consist of scouting activities (exempt under WPS).
- = Harvesting related activities consist of application of desiccants and set (potential yields) checks. Checking the set occurs after desiccation, at least 3 weeks after the last carbofuran application.
- = Mechanical harvesting accounts for most of harvested potatoes in U.S. Hand harvesting occurs only in Maine and is limited to seed potatoes and small organic producers that do not use pesticides (1).
- = Potato harvesting does not occur until five weeks after the last carbofuran application (desiccation occurs 2 weeks after last carbofuran application and harvesting occurs 3 weeks after desiccation).

Carbofuran is an acetylcholinesterase inhibitor but the inhibition is rapidly and spontaneously reversed. Carbofuran is absorbed mainly by inhalation and ingestion; dermal absorption is very slight (3). Carbofuran has low volatility. Field residue dissipation studies show that in SdLm soils the T 1/2 = 4-11 days (1 lb ai/A) and in loam soils the T 1/2 = 1 month (4-9 lb ai/A) (2). Carbofuran metabolites are less toxic than the parent compound.

## III. CONCLUSIONS:

OREB recommends approval of the waiver for the soil residue dissipation data requirement (Guideline 132-1B) for carbofuran use on mechanically harvested potatoes (turned and collected on a conveyor in one operation) ONLY. Product labels should include a statement limiting use to mechanically harvested potatoes. Based on the cultural practices it seems unlikely that workers will be subjected to substantial exposure to soil residues from mechanically harvested potatoes.

OREB's main concern is for seed potato harvesting, specially since children usually comprise the majority of the labor force. Seed potato harvesting is done by hand (to avoid bruises caused by machinery) and therefore involves extensive contact with the soil. If the registrant wishes to keep the use for seed potatoes, chemical-specific, soil residue data should be submitted.

OREB also recommends approval of the waiver for the dermal and inhalation post-application exposure data requirements (Guidelines 133-3 & 133-4) provided PPE labeling requiring long sleeved shirts and long pants is included for reentry activities prior to vine desiccation. OREB agrees that due to the nature of the crop and crop practices the potential for post-application dermal and inhalation exposures is minimized. Based on FDR data submitted for corn fields treated with carbofuran the REI estimates range from approximately 3 to 6 days (based on a transfer factor of 10,000 and a NOEL of 0.5 mg/kg/day from a human study). Since the potential for exposure for workers reentering corn fields is much higher than for potato fields the default REI of 48 hrs, coupled with PPE should provide adequate protection to workers.

#### IV. REFERENCES:

- (1) Univ. of Maine Cooperative Extension. Letter from E. Plissey to D. Carlson dated Aug. 25, 1995. In: FMC Corporation. November, 1995. Justification for Waiver of Carbofuran Data Call-In: Soil Residue Dissipation, Dermal. Passive Dosimetry and Inhalation Passive Dosimetry Exposure - Potatoes. MRID No. 438420-01
- (2) U.S.E.P.A. Pesticide Environmental Fate One Line Summary. Environmental Fate & Effects Division.
- (3) U.S.E.P.A. Recognition and Management of Pesticide Poisonings. 4th Ed. 1989.

cc: Correspondence File  
Chemical File (90601)  
Circulation