UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

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MEMORANDUM

SUBJECT: Ethephon PC 099801: Addendum to Occupational and Residential Exposure Assessment; DP Barcode 314334

FROM: Becky Daiss
Environmental Health Scientist
Reregistration Branch 4/HED (7509C)

THROUGH: Susan Hummel
Branch Senior Scientist
Reregistration Branch 4/HED (7509C)

TO: John Bazuin, Chemical Review Manager
Fungicide Branch
Registration Division (7505C)

Sidney Jackson
Minor Use Inerts and Emergency Response Branch
Registration Division (7505C)

Wilhelmina Livingston
Reregistration Branch 3
Special Review and Registration Division (7508C)

This addendum provides an occupational exposure assessment of use of ethphon on filberts and addresses error only comments submitted by the registrant on the Occupational and Residential Exposure Assessments dated June 20, 2002 (T. Brennon, D283029, D283348)

Occupational Exposure Assessment for Filberts

Handler Exposures

Ethephon is proposed for use on filberts to promote earlier harvest in filbert production. Ethephon has a 48-hour restricted entry interval (REI), with an increase to 72-hours when it is applied outdoors in arid areas. The following handler exposure scenarios were evaluated:

1) Open Mixing/loading liquids for air blast spray application;
2) Applying liquids with air blast sprayer.

Dermal exposures were not assessed due the corrosive nature of ethephon and the lack of systemic toxicity at doses not corrosive to the skin.

Exposure Assumptions

- Average body weight of an adult handler is 70 kg/day.
- Ethephon is applied to filbert as a liquid using air blast spray equipment at a maximum rate of 1.25 pounds ai/acre
- Base-line conditions i.e., no respirator or other protective equipment to reduce inhalation exposure.
- Exposure frequency - The residential handlers are expected to have a short-term exposure duration (less than 30 days).

Handler Exposure and Risk Estimates

The target MOE is 30 for the handler risk assessment. Results of the base-line occupational handler exposure assessments for filberts are presented in Table 1. The MOEs for this occupational exposure scenario showed no risks of concern (i.e. all MOEs were > 30).

Table 1: Ethephon Short Term Inhalation Exposures for Filbert (Target MOE = 30)

Exposure Scenario (Scenario #)	Inhalation Unit Exposure (Ug/lb ai)[a]	Application Rate (lb ai per gallon)	Amount Treated (Gal per day)	Inhalation Dose (mg/kg/day)[b]	Inhalation MOE[c]
Mixer/Loader					
Liquids for Airblast Application (1)	1.2	1.25	40	0.0008	2100
Applicator					
Sprays from Airblast Equipment(2)	4.5	1.25	40	0.0038	480

a PHED data

b Daily Inhalation Exposure (mg/day) = [Application Rate (lb ai/acre) * Treated Area (Acres/day) * Unit Exposure (ug exposure/lb ai handled) * {1 mg/1000 ug (conversion factor)}* Absorption Factor (1.0 for inhalation)] / Body Weight (70kg)

c Inhalation MOE (unitless) = LOAEL (mg/kg/day) / Daily Dose (mg/kg/day). Where LOAEL = 1.8 mg/kg/day based upon a 28-day human oral study.

Revised Residential Exposure Assessment

In error correction comments submitted on the preliminary ethephon risk assessment, the registrant noted that HED used 0.5 gallons per day in the exposure calculations for low pressure handwand and backpack sprayer mixer/loader/applicator scenarios. The registrant correctly noted that the default value for gallons used per day from the Residential SOPs is 5 gallons per day. Table 2 provides the corrected exposure and risk estimates for this residential exposure scenario.

Table 2. Ethephon Residential Exposure - Short Term Baseline Inhalation Exposure

Exposure Scenario (Scenario #)	Inhalation Unit Exposure (Ug/lb ai)[a]	Crop	Application Rate (lb ai per gallon)	Amount Treated (Gal per day)	Inhalation Dose (mg/kg/day)[b]	Inhalation MOE[c]
Mixing/Loading/Applying Liquids						
Low Pressure Handwand application (1)	30	Tomato/Vine max rate	0.04	5	0.00009	20000
Backpack sprayer application (2)	30	max rate	0.04	5	0.00009	20000

a Unit exposures from PHED Data
b Daily Inhalation Exposure (mg/day) = [Application Rate (lb ai/gallon) * Amount Treated (gallons/day) * Unit Exposure (ug exposure/lb ai handled) * {1 mg/1000 ug (conversion factor)}* Absorption Factor (1.0 for inhalation)] / Body Weight (70kg)
c Inhalation MOE (unitless) = LOAEL (mg/kg/day) / Daily Dose (mg/kg/day). Where LOAEL = 1.8 mg/kg/day based upon a 28-day human oral study.