



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

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OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: WA 880021. Phosphamidon Registration on Apples. EPA  
Reg. No. 10163-45 MRID No. (None) DEB No. 5884

FROM: Arliene M. Aikens, Chemist  
Special Registration Section II  
Dietary Exposure Branch  
Health Effects Division (H7509C)

THROUGH: Leung Cheng, Ph.D, Acting Section Head  
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TO: William Miller/ Lachman Bhatia PM-16  
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and

Toxicology Branch  
Health Effects Division (H7509C)

The Washington State Department of Agriculture requests clarification on the EPA requirement for apple residue data for the phosphamidon metabolite desethylphosphamidon (DEP), in response to a challenge from the Gowan Co. Last year, DEB recommended against the Sec. 24(c) use of Phosphamidon 8 Spray on apples on the basis of: (a) insufficient data to determine whether residue levels of phosphamidon and its metabolites would be above tolerance levels and (b) inadequate description of analytical methods used by the Gowan co. to generate field data submitted at that time with the 24(c) request ( WA 880021, F. B. Suhre, 10-24-88).

Phosphamidon 8 Spray contains 8 lbs. of phosphamidon (2-chloro-2-diethylcarbamoyl-1-methylvinyl dimethyl phosphate) per gallon. The end use product is a registered trademark of the Gowan Co. The registrant of the technical active ingredient phosphamidon is Ciba-Geigy Corp.

Phosphamidon is registered for use on apples, broccoli, cantaloupe, cauliflower, cotton, cucumbers, grapefruit, lemons, oranges, peppers, potatoes, sugarcane, tangerines (AZ and TX only), tomatoes, walnuts and watermelons. The registered formulation for use on food crops is the 8 lb/gal SC/L with phosphamidon as the only active ingredient. Tolerances are established in or on food crops as residues of phosphamidon and all of its related chloinesterase-inhibiting metabolites (40CFR 180.239). The specific tolerance established for apples is 1.0 ppm.

Registered uses of the 8 lb/gal formulation include the application of up to 2.0 lbs ai/A using 0.25 lbs ai/100 gal spray solution. Application may be repeated at 7 to 14 day intervals in areas other than western states, and at 10 to 21 day intervals in western states, with a PHI of 30 days.

A Registration Standard was issued for phosphamidon with the Residue Chemistry Chapter dated 6-22-87, and the Guidance Document dated 12-87. At that time the data gaps identified included: Nature of Residues (plants and animals); Residue Analytical Method (plants and animals); Storage Stability; and Magnitude of Residues (field crops). Residue Chemistry related data was to be submitted as generated. Since the Guidance Document was issued, several extensions of time were requested by the registrant. RD and DEB files do not indicate receipt of field trial study data generated after 10/24/88, as requested in the previous DEB recommendation.

The Gowan Co. claim that EPA has not provided rationale for the analysis of the phosphamidon metabolite desethylphosphamidon (DEP) is not valid. The Registration Standard provides adequate rationale for the required analysis of phosphamidon and desethylphosphamidon (DEP) residues in apples. The Registration Standard also reviewed analytical methodology and suggested the use of a GLC method capable of detecting both phosphamidon and DEP in or on plant commodities.

### **Proposed Use**

The Sec. 24(c) registration (WA880021) involves the application of 1 pt. (1.0 lb. ai/A) of phosphamidon 8 Spray per acre in a minimum of 400 gallons of water. Repeated treatments at 14 day intervals or as needed are to be used, with PHI=7 days. A maximum of 3 lbs. ai/A may be applied per season to control aphids on apples. The RAC apples is the major crop use of phosphamidon, as compared to use on other RAC(s) (Reg. Std. 6/87).

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### Residue Analytical Method

The method submitted by the Gowan Co. with this request is based on an AOAC method [JAOAC, 48:1, 158-1, 160 (1965)] and detects many organophosphate compounds. In this method, organophosphate pesticides are extracted with ethyl acetate, without sample cleanup. The ethyl acetate extract is concentrated and subjected to gas liquid chromatography. However, the type of detector used was not identified. Further, no new field data was provided with the current submission. No recovery data was provided for the analysis of phosphamidon and DEP in apples. Apparently, the method submitted with the current submission is the method used in 1988 to generate the phosphamidon data provided at that time.

The Reg. Std. described a GLC detection method which could be used to determine residues of both phosphamidon and DEP (1985; MRID 00155166). The method submitted by the Gowan Co. is not the same procedure. The suggested procedure involves a dichloromethane extraction followed by a sample cleanup with chloroform:hexane prior to GLC analysis with a flame photometric detector in the phosphorus mode. Recoveries reported for this method were >85 % in the analysis of hops, with limits of detection of 0.03 and 0.05 ppm. for phosphamidon and DEP respectively. There is no record of a method validation study of Phosphamidon and DEP analysis in apples.

### Conclusions and Recommendation

Additional field study data requested by DEB (F. Suhre, memo 10-24-88) was not received. The analytical method submitted was not shown to be adequate to generate phosphamidon and desethylphosphamidon (DEP) residue data in apples. No data was submitted on DEP residues in apples. The Registration Standard provided clear rationale on the requirement for residue data on both phosphamidon and its metabolite DEP. DEB reiterates its recommendation against this Sec. 24(c) registration of phosphamidon use on apples.

CC: R.F., Phosphamidon S.F., 24(c), Circu, AIKENS, PMSD/ISB  
RDI:LC:11/28/89:EZ:11/28/89  
H7509C:DEB:AA:aa:CM#2:Rm 810:557-7379:11/17/89: Revised 11/27/89

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