

US EPA ARCHIVE DOCUMENT

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Init.: SM

To: H. Jacob
Product Manager 21
Registration Division (TS-767)

From: Carolyn K. Offutt *for product*
Head, Environmental Processes and Guidelines Section
Exposure Assessment Branch, HED (TS-769)

Attached, please find the estimated environmental concentration review of:

Reg./File No.: 359-706

Chemical: Fosetyl-Al

Type Product: Fungicide

Product Name: Aliette

Company Name: Rhone Poulenc

Submission Purposes: New use on hops, reentry assesment.

ZBB Code: _____

Action Code: 330

Date In: 5/14/85

EFB#: 5595

Date Completed: 5/24/85

TAIS (Level II) Days

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Deferrals To:

_____ Ecological Effects Branch

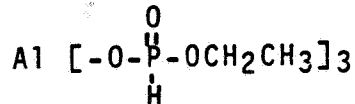
_____ Residue Chemistry Branch

_____ Toxicology Branch

REVIEW OF REENTRY DATA

1. CHEMICAL:

Fosetyl Al: Aluminum tris[O-ethyl phosphonate]



2. TEST MATERIAL:

Radiolabeled Aliette applied to leaves of vines.

3. STUDY/ACTION TYPE:

Review of a previous submission to estimate reentry exposure as a response to a Section 18 request.

4. STUDY IDENTIFICATION:

Aluminum ethylphosphite (Aliette) - Studies with the ¹⁴C-labeled compound in Vines. Brockelsby et al. of May and Baker Ltd. #AR/1257: May 1977. (Accession No. 247647-B)

5. REVIEWED BY:

James D. Adams, PhD
Chemist

Environmental Processes and Guidelines Section

James D. Adams
5/15/1985

6. APPROVED BY:

Carolyn K. Offutt, Chief *for* PKSatta
Environmental Processes and Guidelines Section
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5/15/1985

7. CONCLUSIONS:

The estimated fieldworker exposure to Fosetyl-Al residues 7 days after pesticide application would be 1.63 mg/kg/day or 50.5 mg/kg/year.

8. RECOMMENDATIONS:

If the above exposure level provides an adequate margin of safety, the request for use should be granted with the provision that the reentry interval would be 7 days. We do not have data to support an earlier reentry interval. If that exposure level does not provide an adequate margin of safety, registration might be granted with protective equipment [e.g. impervious gloves] specified.

9. BACKGROUND:

The states of Washington, Oregon, and Idaho have requested that the Agency allow them the use of Alliette to control downy mildew on hops. EAB was previously requested to review data on Aliette residues on/in grape leaves at intervals after application for estimation of fieldworker exposure to residues on hop leaves. In that review, I stated that the estimation could not be accomplished without a factor for conversion of the data from ppm to weight/surface-area. Such a conversion factor has now been supplied and, this report is estimation of fieldworker exposure levels at intervals after application of Aliette.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

Mr. Nick Somma, Rhone-Poulenc, has supplied a conversion factor of 100 cm² of grape leaves being equal to 1 g of leaves. This value is about the same as conversion factors found for some other plant surfaces. I have used that value in conjunction with the reported foliar residue levels to estimate dislodgeable residue levels and then used the dislodgeable residue levels in conjunction with Popendorf's correlation to estimate Fosetyl-Al exposure levels for a 70 kg person working in the vines 10 hours/day for 31 days/year. [The harvest lasts from about 15 August to 20 September and the workers are employed from 8 to 16 hours/day for 6 days per week.] The data are summarized in the attached Table 1.

The gas-chromatography (gc) analytical-data in the vine study show residue levels of 190 ppm at day 7, 297 ppm at day 14, and 272 ppm at day 21 with no value at day 0. The gc data are consistently 20 to 25 percent lower than the data from analysis with radioactivity. I believe that gc data are more reliable because they are specific for the parent pesticide whereas the radioactivity values are derived from all radioactive species including breakdown products. The fact that residues at days 14 and 21 are higher than the residues at day 7 may be due to variability of the data or loss of a sample portion. Those data indicate high stability of Fosetyl-Al residues from day 7 to day 21 under the conditions of the study.

Using the 100 cm²/g conversion factor, the dislodgeable residue levels are 1.9, 3.0, and 2.7 ug/cm² at days 7, 14, and 21 after application, respectively. These are relatively high values compared to other dislodgeable residue values reported for other pesticide/crop combinations, and consequently the exposure levels are comparatively high. Since the residue level at day 7 is lower than the value at day 14, the exposure estimate for day 14 should be used for day 7. That value is 1.63 mg/kg/day or 50.5 mg/kg/year.

Almost all of the expected exposure [> 99%] will be dermal so dermal penetration should be considered in the risk assessment.

The water solubility of Fosetyl-AL [the active ingredient] is 120 g/liter of water. This is a high water solubility for a pesticide and the structure of the pesticide indicates that it must have a very low lipophilicity. Therefore, the dermal penetration for Fosetyl-AL residues must be relatively low, that is certainly less than 10% and probably less than 1% of the dose received.

11. COMPLETION OF ONE-LINER:

Not applicable

12. CBI APPENDIX:

Not applicable

TABLE 1

Estimates of Fosetyl-Al Exposure Levels for Fieldworkers

Days after application	Foliar Residues		Human Exposure, mg/kg		
	ppm	ug/cm ²	hourly	daily	yearly
7	190	1.9	0.104	1.043	32.3
14	297	3.0	0.163	1.63	50.5
21	272	2.7	0.149	1.49	46.3

Assuming a 10 hour work day; 31 work days/year; and using Popendorf's correlation; 70 kg person.

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