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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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MEMORANDUM

OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

SUBJ: EPA Regis. No. 2938-UEL, Amended Registration  
Chlorpyrifos on Corn, Beets & Almonds.  
[No Accas. no.; RCB #1242]

FROM: Allan J. Reiter, Ph.D., Chemist  
Residue Chemistry Branch  
Hazard Evaluation Division (TE-769C)

*Allan J. Reiter*

THRU: Edward Sager, Section Head  
Special Registration Section 2  
Residue Chemistry Branch  
Hazard Evaluation Division (TE-769C)

*[Handwritten initials]*

TO: Jay S. Ellenberger, SM #13  
Registration Division (TS-767C)

Wilbur-Ellis Co. has resubmitted its request for an amended registration for ground and aerial application of chlorpyrifos (Lorsban 18 Salt) to control cutworms on corn and sugar beets and to control ants on almonds. RCB's original request (Memo of A. Reiter, 1/31/85, 25437984 and 254378) recommended against the registration because of the lack of detail in the description of use. An amended label designed to remedy this deficiency was included with the current submission. As mentioned before (ibid.), this is a new formulation of chlorpyrifos (O,O-diethyl C-3,5,6-tri-chloro-2-pyridyl)phosphorotriester) whose inert ingredients are all cleared under 40 CFR 160.1001.

The following tolerances are established for the combined residues of chlorpyrifos and its 3,5,6-trichloro-2-pyridinol (TCP) metabolites: corn, field, grain & fresh, 0.1 ppm; ears, leaves & cobs, 10 ppm; sugar beets, roots, 1 ppm; sugar beets, tops, 0 ppm; almonds, 0.2 ppm; and, almond hulls, 10 ppm.

Registered and Proposed Uses

Corn

Registered uses of chlorpyrifos on field, pop-, and sweet corn (Chlorpyrifos Registration Standard, Residue Chemistry Chapter, 1/25/84) include the 1,5 G formulation which is soil-applied as a preplant, broadcast application at 1-3 lb a.i./A, as an at-planting band or insecticide application, and as an at-harvesting (postemergent) over-the-top or side-dress application at 0.9-2.4

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at 2.1./1,000 feet of row (not to exceed 2 lb a.i./A based on a 30-inch row spacing). Only one preplant, at-planting or at-cultivation treatment may be made per season. Foliar applications of the 1% S formulation are broadcast at 0.75-1 lb a.i./A using aerial equipment or at 0.2-1.2 on a.i./1,000 feet of row (not to exceed 2 lb a.i./A/year) using ground equipment. If needed, a second foliar application may be made after a 10-14-day interval. The 4 lb/gal SE formulation is soil-applied as a preplant, broadcast application at 1-2 lb a.i./A and as a post-emergent, at-cultivation application (sidedress to both sides of row) at 1 lb a.i./A. Multiple post-emergent treatments using ground equipment (hand over row or directed spray to plant bases) or aerial equipment (broadcast spray) are made at 0.25-1.5 lb a.i./A not to exceed 7.5 lb a.i./A/season. Treated corn fodder may not be fed to livestock within 35 days of the last treatment; treated corn silage may not be harvested for livestock feed within 14 days of the last treatment. A 35-day PHI for harvest of grain and a 14-day preharvesting interval is in effect for all applications.

The proposed use on corn for Leptan 18 Salt includes ground or aerial application of 0.2-0.4 lb a.i./A broadcast at planting or post-emergence. For band application, the rate is reduced proportionately to 0.2-0.4 lb a.i./treated acre. Restrictions include limiting application to no more than 0.8 lb a.i./A per season; a PHI of 15 days; a post-treatment restriction on grazing or feeding of treated silage to meat or dairy animals for 14 days; and, a 35-day post-treatment restriction on feeding of fodder to meat or dairy animals.

#### Sugar Beets

Registered uses of chlorpyrifos on sugar beets include the 1% S formulation for at-planting or post-emergent (up to the 2-4 true leaf stage) application at 1.5-2 lb a.i./A (21-inch row spacing). Only one soil-incorporated application per year may be made. No PHI has been established. The 4 lb/gal SE formulation is registered for multiple aerial or ground foliar applications at 0.75-1 lb a.i./A (not to exceed 4 lb a.i./A/season). A 30-day PHI is in effect for foliar applications and livestock may not graze on treated areas following foliar application. PHI Registrations (403.24(c)) are in effect for use of the 4 lb/gal SE formulation in 10 northern and central states for up to four broadcast foliar applications at 1.25 lb a.i./A/treatment using ground or aerial equipment. A 120-day PHI is in effect. Livestock may not graze on treated areas and root tops may not be used as feed for meat or dairy animals.

The proposed use on sugar beets involves 0.2-0.4 lb a.i./A broadcast by ground or air at planting or post-emergence. For band application, the rate is proportionately reduced to 0.2-0.4 lb a.i./treated acre. A restriction to only one application per growing season is imposed. Once foliar applications may be made

then the label should include a 30-day PHI and a restriction on livestock grazing on foliar-treated areas.

#### Almonds

The registered use includes the 4 lb/gal EC formulation on almond trees tank mixed with oil at 0.25-0.5 lb a.i./100 gal/A as a dormant or delayed dormant application made to the entire tree to the point of runoff. Only one application may be made during the dormant or delayed dormant period and treated orchards may not be grazed by meat or dairy animals. The 50% WP formulation has been approved as a foliar treatment at 2 lb a.i./A in 60-100 gal of water/A at no more than three applications per season with a 14-day PHI. For dormant or delayed dormant treatments, the 50% WP is applied in a manner similar to the 4 lb/gal EC formulation.

The proposed use of Lanban 18 Salt involves a single application only of 0.3-0.4 lb a.i./A broadcast by ground rig before hull split. A restriction on grazing of meat or dairy animals in treated orchards should be added to the label.

#### Analytical Methodology

Analytical methods suitable for enforcement purposes has been submitted by Dow Chemical Co. and are listed as follows with their associated petition number and percent recovery: corn, Method No. ACR 71.10 (33437133, 75-1178); sugar beets, No. 71.102 (33437242, 75-1088); and almond hulls and nutmeat, No. ACR71.103 (33437177, 75-1088). Method ACR 71.103 is included in FRL Vol. II, Method I; it was adequately reviewed in 33437279 (Memo of P. Gray, 2/23/83). It employs gas chromatography of the trimethylsilyl derivatives with electron capture detection. The EC also includes methods for the metabolite TCP (Method III) and for milk and cattle tissues (Method IV).

#### Residue Data

No new residue data were included with this amended label. Since the proposed use of chlorpyrifos on corn and on sugar beets is at significantly lower rates than currently registered uses and similar restrictions are imposed, then RSE does not expect the combined residues of chlorpyrifos and its TCP metabolite resulting from the proposed use to exceed the established tolerances of 0.1 ppm for corn (field, grain & fresh), 10 ppm for corn forage and storage, and 1 ppm for sugar beets (roots and tops).

Residue data on almonds were previously submitted in 33437279. Three foliar applications were made at up to 2 lb a.i./A each during the growing season. Samples were taken 14-16 days following the last application and analyzed for combined residues of chlorpyrifos. These averaged 6.6 (R-0.11) ppm in almond nut meats

and 2 (0.22-0.2) ppm in almond hulls (Reg. No. 071176). Since the foliar application proposed in the amended registration is similar, then RSE does not expect the resulting residues to exceed the established tolerances of 0.2 ppm for almonds, or 12 ppm for almond hulls. Furthermore, if applications of both the 804 WP and the Loraban 18 Salt formulations were made during the same season (i.e., 6 lb a.i./A and 0.4 lb a.i./A total decays, respectively), because of the timing and low application rate proposed RSE still does not expect residues of chlorpyrifos and its TCP metabolite to exceed the above-cited tolerances for almonds and almond hulls.

#### Meat, Milk, Eggs and Poultry

Corn grain, forage, silage and fodder and almond hulls are all cattle food items. Corn grain is a poultry/swine feed item; sugar beet leaves, parsnips and pulp are also animal food items. Since residues of chlorpyrifos and its TCP metabolite are not expected to exceed the established tolerances on these commodities, then RSE concludes that the proposed use of chlorpyrifos will not result in secondary residues exceeding their established tolerances.

#### Conclusions

1. Combined residues of chlorpyrifos and TCP resulting from the proposed use of chlorpyrifos on corn should not exceed the established tolerance of 0.1 ppm on corn (field, grain and fresh), or of 12 ppm on corn fodder and forage.
2. Combined residues of chlorpyrifos and TCP resulting from the proposed use of chlorpyrifos on sugar beets should not exceed the established tolerances of 1 ppm on sugar beet roots and 2 ppm on sugar beet tops.
3. Combined residues of chlorpyrifos and TCP resulting from the proposed use of chlorpyrifos on almonds should not exceed the established tolerances of 0.2 ppm on almond meat and 12 ppm on almond hulls.
4. Secondary combined residues of chlorpyrifos and TCP are not expected to exceed the established tolerances of 1.5 ppm in meat, fat and meat by-products of cattle, of 0.15 in milk fat (reflecting 0.01 in whole milk), of 2.2 ppm in meat, fat and meat by-products of turkeys, of 0.1 ppm in meat, fat and meat by-products of goats, hogs, horses and sheep, and of 0.01 ppm in eggs, meat, fat and meat by-products of poultry.
5. Since foliar applications may be made to almond trees, the label should be required to include a 30-day PHI and a restriction on livestock grazing.

Recommendation

Providing the petitioner amends the proposed label to include the restrictions noted in conclusion 5 above, RGS has no objections to the proposed amended registration.

cc: Amended Use F. (Chlorpyrifos)  
Subject F. (Chlorpyrifos)  
RHS/ISS  
Reading F.  
RHS  
Classification  
Reviewer

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