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Reading File

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

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SUBJECT: Reg. Nos. 464-448, -523. Chlorpyrifos on citrus
orchard floors. (Accession Nos. 252500 and 252499)

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THRU: Charles L. Trichilo, Chief
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and

Exposure Assessment Branch
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Dow Chemical Company requests amended registrations for Lorsban 4E (4 lb/gal chlorpyrifos [O,O-diethyl O-3,5,6-(trichloro-2-pyridyl) phosphorothioate] as emulsifiable concentrate) and Lorsban 15G (15% chlorpyrifos, granular) to permit use on citrus orchard floors for control of ants (including fire ants) and weevils.

A tolerance of 1 ppm is established for residues of chlorpyrifos and its metabolite 3,5,6-trichloropyridinol in or on citrus, to cover residues which result from the registered use of a maximum of 2 spray applications of 3.5 lb active chlorpyrifos/A (6 lb active/A in CA) applied at 0.5 lb active/100 gal. A maximum of 7.5 lb active/year may be applied, with PHI of 21 days for applications of < 3.5 lb active/A and PHI 35 days for applications >3.5 lb active/A. There is a restriction against allowing livestock to graze in treated areas.

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The use proposed for this amended registration is for up to 10 lb active/A (in 25-50 gal/A for liquid formulation) to be applied with ground equipment to the orchard floor. Alternatively, two applications of 5 lb active/A may be made, or (to control ants) 1 lb active/A may be applied "as needed." Not more than 10 lb active per acre per season may be applied, and a 28 day PHI and a grazing restriction are imposed.

Dow should be requested to clarify "per season" on the label--presumably, they mean "per year."

The tolerance for chlorpyrifos on citrus was established in PP#1F2575. Although none of the residue data in that petition are from studies using the treatment rate which was eventually registered (data are mostly from higher rates which were originally proposed), the data were considered sufficient to demonstrate that residues from the registered use will not exceed the established tolerance.

Two reports are submitted with this request, containing residue data from a total of six studies conducted on oranges, lemons, grapefruit, and tangeloes in CA and FL. Fruit from the studies in CA were analyzed for both parent and metabolite; recoveries were 73-99% for parent and 72-110% for TCP. Recoveries for parent analyzed by the TCP method were 86-110%. Fruit from the FL studies were analyzed for (total) TCP only. Recoveries of TCP were 70-107%; no recovery data for parent analyzed as TCP are provided, but analyses are performed in the same laboratory, 3 years later. Method sensitivities are reported as 0.01 ppm for parent and 0.05 ppm for TCP (both studies).

The CA studies reflect residues in oranges and lemons harvested from orchards treated once with either 10.1 or 11.1 lb active Lorsban 15G, with 2 studies using ground equipment and 1 study using aerial application. Control samples contained 0.001-0.008 ppm parent and 0.000-0.013 ppm TCP. The studies where chlorpyrifos was applied with ground equipment show residue levels of 0.01-0.04 ppm parent and non-detectable (<0.05 ppm) TCP at 4 days PHI; 0.1-0.3 ppm parent and <0.05 ppm TCP at 17 days PHI; and 0.01-0.02 ppm parent and < 0.05 ppm TCP at 28 days PHI. The study where aerial application was made shows residue levels of 0.15-0.29 ppm parent and <0.05-0.06 ppm TCP at 4 days PHI; 0.06-0.15 ppm parent and <0.05 ppm TCP at 14 days PHI; and 0.04-0.05 ppm parent and <0.05 ppm TCP at 28 days PHI.

The FL studies reflect only TCP residue levels in oranges, grapefruit and tangeloes treated twice with 10 lb active/A (2X proposed use), using either the 4E or the 15G formulation, and harvested 28 days after the last treatment. Separate analyses for parent compound were not performed; the TCP residues reported will include that contributed by the alkaline

hydrolysis of chlorpyrifos. Residue levels in controls were 0.000-0.005 ppm TCP; residue levels in all fruit samples were all less than method sensitivity (0.05 ppm) when corrected for controls and recoveries.

In PP#3F1306, uptake and translocation studies on beans and corn were submitted and reviewed (F.D.R. Gee, 3/1/73). The bean study indicated that chlorpyrifos is not absorbed from nutrient solution, and the corn study demonstrated that chlorpyrifos is not taken up from soil to any appreciable extent.

The residue data submitted with this amended registration request support our earlier conclusion that chlorpyrifos will not be taken up and translocated from soil. Therefore, we conclude that the established tolerance for chlorpyrifos and its metabolite on citrus is not likely to be exceeded by addition of the proposed use on citrus orchard floors.

Exposure Assessment Branch (EAB), in the environmental fate review of chlorpyrifos (Reg. No. 464-448, H. L. Manning, 12/2/81), mentioned that possible groundwater contamination in FL should be addressed when the use of chlorpyrifos on citrus is registered. Apparently, nothing further has been done concerning this potential problem (personal communication, C. Offut, 5/10/84). RCB considers that EAB should examine this issue prior to issuance of the amended registration, and therefore defers to EAB for their determination of whether or not groundwater contamination is likely to occur from the proposed amended use of chlorpyrifos.

CONCLUSIONS AND RECOMMENDATIONS

The established tolerance for chlorpyrifos and its metabolite on citrus is not likely to be exceeded by addition of the proposed use on citrus orchard floors.

Because of concerns expressed in an earlier EAB review of chlorpyrifos on citrus, RCB defers to EAB for their determination of the potential for groundwater contamination from this proposed amended use.

Provided EAB has no objections, RCB recommends that the proposed amended registration be issued.

cc: R.F., Circu. Reviewer, S.F. Chlorpyrifos, Amended Use File
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TS-769:RCB:LMB:print-out:wh:5/11/84:CM#2:RM810:X77377:5/11/84