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DICROTOPHOS

Task 4: Exposure Profile

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Exposure Profile - Dicrotophos

Introduction

Dicrotophos is an insecticide and miticide registered for use on cotton, soybeans grown for seed, and ornamental trees. Of the 475,000-675,000 lb of dicrotophos used annually, 91% is used on cotton, largely for the control of cotton fleahoppers, lygus bugs, and thrips. Soybeans and ornamental trees are relatively minor use sites. Dicrotophos is formulated as 7.5 and 8.0 lb ai/gal soluble concentrate/liquids (SC/L) and as an 86% ai ready-to-use formulation (RTU). The SC/L formulations are applied by aerial or ground equipment to agricultural crops while the RTU, manufactured as a specialized trunk injector unit, is used on ornamental trees. All dicrotophos formulations must be applied by certified applicators.

All Formulations

Data are not available to fully assess the potential for exposure of humans and wildlife to dicrotophos. Because dicrotophos is a highly toxic cholinesterase inhibitor, exposure risks are potentially high. Data are needed to assess the potential for dicrotophos to contaminate groundwater and to accumulate in non-target organisms. In addition, data on the exposure of humans associated with actual dicrotophos use operations and due to re-entry exercises are needed. The miscibility of dicrotophos with water indicates that leaching could lead to groundwater contamination. Whether the rapid degradation of dicrotophos in soil (Osgerby and Clarke, 00013470; Osgerby and Woodburn, 00028571) will partially negate any leaching hazard is unknown. A greenhouse study (Bull and Lindquist, 00013471) showed that 16-31% of the applied ^{32}P remained as dislodgeable residues 24 hours after [^{32}P]dicrotophos was applied to leaves of cotton plants. The decline of dislodgeable dicrotophos residues under field conditions is unknown.

Exposure associated with the use of the RTU formulation appears to be negligible since both the injection unit and the sites (trees) are closed systems and since the sites are locally treated and represent minor uses.

Liquid Formulations

The SC/L formulations pose an exposure risk to humans during mixing and loading operations due to splashing and during application due to spray drift. In addition, dislodgeable plant residues, and possibly dicrotophos vapors, pose a reentry exposure risk for 16 hours according to the use pattern. Protective clothing and masks or respirators of a type recommended for dicrotophos would minimize such exposure.

References

Bull, D.L., and D.A. Lindquist. 19?? Rate of absorption of Bidrin into plant parts. (Unpublished study received Jan. 28, 1966; prepared by U.S. Agricultural Research Service, Entomology Research Div., Cotton Insects Research Branch, submitted by Shell Chemical Co., Washington, D.C.; CDL:000834-AN). (00013471)

Osgerby, J.M., and D. Clarke. 1965. Project Progress Report PPR FD/5/65: The stability of Bidrin in soil:Project F 18. (Unpublished study received Jan. 28, 1966; prepared by Shell Research, Ltd., submitted by Shell Chemical Co., Washington, D.C.; CDL:000834-AM). (00013470)

Osgerby, J.M., and A.T. Woodburn. 1965. Project Progress Report PPR FD 48/65:The adsorption and decomposition of Bidrin and Azodrin in soil: Project F 18. (Unpublished report prepared by Shell Research, Ltd.). (00028571)