

chemicalWATCH Factsheet

CYPERMETHRIN

Cypermethrin (trade-names include: Ammo™, Cymbush™, Demon™) is one of a handful of light-stable synthetic pyrethroid insecticides enjoying ever greater use in agriculture and lately, for termite control. In 1983, sales of just three, deltamethrin, fenvalerate and cypermethrin, accounted for 86% of all pyrethroid sales. Structurally, cypermethrin is a fenvalerate-permethrin hybrid, and like permethrin, cypermethrin has been classified as a Class C (possible human) carcinogen.

ICI Americas, Inc. of Great Britain first sought an experimental use permit and temporary tolerances for use of Cymbush™ on cotton in the United States in 1979. Cypermethrin then became a popular cotton culture alternative to organophosphates and pyrethroid/organophosphate combinations because it kills both the boll weevil and the *Heliothis* bollworm at very low application rates (0.06 to 0.12 lbs. of active ingredient per acre). By 1981, an application for conditional registration was before the Agency, which found that "cypermethrin meets or exceeds the Rebuttable Presumption Against Registration (RPAR) criteria set forth in 40 CFR 162.11." In spite of positive animal cancer data exceeding RPAR risk criteria,

EPA decided in 1984 that "for the period of this conditional registration, the benefits of use outweigh the risk."

EPA reviewers found that cancer bioassays conducted in mice "...confirm that there is no oncogenic response in the male lung tissues, but [that]...there is a statistically significant higher frequency of neoplasms (tumors) in the female high dose test group." The mouse tumors were benign, and similar results were not found in rats, the other species tested. Further investigation into interim sacrifice data, found that cypermethrin did not cause mouse tumors to develop more rapidly than in control groups. Mutagenicity tests were negative, and the chemical is not known to cause animal birth defects or to affect animal fertility or reproductive outcomes. Over 99% of a dose administered to a test rodent is excreted as the parent compound in urine and feces, but a small amount is retained in fat.

In chronic effects studies conducted in the dog, gastrointestinal symptoms, including elevated incidence of fluid feces and vomiting, were seen among dogs fed 5 and 15 mg/kg/day for one year. Although the manufacturer was of the opinion that "the increased in-

cidence of fluid feces in the 5 and 15 mg/kg/day groups [was not] of toxicological significance, because of the absence of any histopathological changes in the alimentary tract or adverse consequences on general health," EPA disagreed, stating that, "certain other synthetic pyrethroids are known or suspected to cause similar gastrointestinal disturbances via direct action on the nervous system." Signs of degeneration of the sciatic nerve were seen in special tests where animals were fed high doses of cypermethrin, as well as body tremors, gait abnormalities and uncoordination, disorientation, and hypersensitivity to noise.

Although cypermethrin is not very acutely toxic (oral rat LD₅₀=4000 mg/kg, product labels warn of the possibility of skin and eye irritation, such as a: "tingling, burning, prickling, or numbing sensation which often begins about one hour after exposure and can persist up to 1-2 days with no residual effects." Several formulations contain petroleum distillates, xylenes, paraffin oils and other undisclosed ingredients. Most synthetic pyrethroids, and cypermethrin is no exception, are very acutely toxic to fish and aquatic organisms.

Bibliography on reverse

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Pesticides and You

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