



Chemical Watch Factsheet

A Beyond Pesticides/ NCAMP Factsheet

Isofenphos

Better-known to consumers by the trade-names Oftanol™, Amaze™ and most recently Pryfon™, various formulations of this soil insecticide are sold for use on grass to kill white grubs and Japanese beetles, to control corn rootworm, and now as a termiticide. However, a recent study conducted at U. California-Davis has found that isofenphos can cause delayed neurotoxicity in animal tests, and reports of bird-kills and other undesirable non-target organism effects associated with the chemical's use continue to accumulate.

Developed in West Germany by Bayer-AG, isofenphos was registered in 1980 and is marketed domestically by

its subsidiary, Mobay Chemical Corp. It is extremely toxic (oral rat LD50=32mg/kg) and easily absorbed through the skin. Reports of skin irritation are not uncommon. Isofenphos is an organophosphate insecticide, and

its toxicity results in part from its ability to inhibit the critical nervous system enzyme acetylcholinesterase. Symptoms of poisoning include: headaches, fatigue, nausea/vomiting, muscle pain and twitching, and in extreme cases, convulsions, respiratory depression and death. It can

to be quite toxic to fish and earthworms.

A Chemlawn application of Oftanol™ in New York in 1985 was linked to the deaths of over 100 red-winged blackbirds. Analysis of the birds' gizzards showed 22.1

parts-per-million of isofenphos, well over the lethal threshold dose. Such incidents led the State of Massachusetts to restrict use of isofenphos to use on commercial turf only. Interestingly, isofenphos is used more than twice as frequently on golf courses for grub control than is

UPDATE: *September 2007* 1999 VOLUNTARY CANCELLATION

A study conducted by Williams et al. (2004) revealed that exposure to isofenphos induces human DNA mutation beyond endogenous repair capacity and disrupts cholinergic nuclear signaling. This evidence supports the neurotoxicity of isofenphos. Isofenphos is also very toxic to aquatic organisms, birds, bees and mammals. When considering the pesticide's toxicity and exposure potential to non-target organisms, EPA found that acute and chronic levels of concern were exceeded for terrestrial animals and aquatic invertebrates. Chronic levels of concern were also exceeded for freshwater and estuarine/marine fish.

Isofenphos has a soil half-life of up to one year making it very persistent in soil. Even though it is not likely to move towards groundwater, it is able to reach surface waters via runoff. However, despite isofenphos' ability to reach surface waters, the EPA does not believe its residues will be found in drinking water.

The voluntary cancellation of isofenphos was effective December 31, 1999. Sales and distribution of the product have been discontinued.

take weeks or months to recover from a serious poisoning.

Isofenphos is used widely on golf courses, where a reduction in effectiveness, beginning in 1984, has been noted, possibly indicating the development of insect resistance. Product labels warn that treated grass clippings should not be fed to livestock. Isofenphos is known

diazinon, which was put into Special Review because of its hazards to birds.

Isofenphos may not be used in California at all. In 1983, the California Department of Food and Agriculture (CDFA) responded to the appearance of Japanese beetles in the Sacramento area

by putting together an “eradication” program. Officials decided to use Carbaryl (Sevin™), diazinon (Spectracide™) and applications of granular isofenphos intensively over a 4.5 square mile area. (Isofenphos was not registered for use in California at the time, so a “Special Local Need” (FIFRA Section 24C) registration was obtained). A local citizen’s group called ACTION (Affiliated Citizens to Investigate

Oftanol Now) reacted and filed suit against both CDEA and Governor Deukmejian. ACTION lost their suit, but CDEA agreed to fund an investigation of the neurotoxicity of Oftanol™ at the U. California-Davis.

The acute toxicity test performed there indicated that poisoned animals recover only to exhibit delayed neurotoxicity several weeks later, and pathological ex-

aminations of nerve tissues indicated demyelination (loss of the insulating sheaths that wrap nerve fibers). These data led CDEA to temporarily halt use of Oftanol, although the eradication program with diazinon and carbaryl was allowed to continue.

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Isofenphos chemicalWATCH Factsheet Bibliography

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