



Michael D. Zagata
Commissioner

MEMORANDUM

TO: Maureen Serafini, Supervisor
Pesticide Product Registration

FROM: Alfred Columbus, Supervisor
Technical Support & Laboratory Services

RE: Comparison of the Leaching Potential
Of Various Termiticides

DATE: September 20, 1996

imidacloprid

Luanne Whitbeck has compared the leaching potentials of the following chemicals for use in comparison to imidacloprid: bifenthrin (never registered in NYS for termites), chlordane (no longer registered), chlorpyrifos (Dursban), cypermethrin, and permethrin. Monsanto has applied for registration to use imidacloprid as a termiticide.

The physicochemical parameters are summarized in the attached table. The numbers in brackets are the values that were input into the LEACHP model. All other inputs remained the same. All runs utilized the sandy Riverhead soil profile, typical of an area where termites are a problem and the maximum application rate was applied once a year.

Modeling

The modeling of both bifenthrin, cypermethrin and permethrin projected no leaching during the ten year period. Chlorpyrifos was projected to stay below 3.0E-10 ppb (0.0000000003 ppb) until about 8 years, then it spiked up to 8.0E-10 ppb (0.0000000008ppb).

Imidacloprid was projected as steadily increasing, reaching almost 350 ppb towards the end of the modeling period. The charts for chlorpyrifos, imidacloprid, and chlordane are attached.

Summary

Results of the modeling comparison of the six termiticides indicate that, changing only the K_{oc} s, half-lives and application rates (based on % active), only imidacloprid was projected to have an impact on groundwater. Chlordane, which is a known contaminant, was only projected to have an impact of .000012 ppb.

Attached is a copy of the input file for imidacloprid. All six termiticides were input into the same original file and saved under its own name, so there could be no chance of other parameters being different.

Attachments

cc w/att: L. Whitbeck

Para-meter	Imidacloprid	Bifenthrin	Chlordane	Chloryprifos
K _{oc}	155-1120 [500]	130,00- 300,000 [180,000]	24,600 - 15,500 [20,000]	4,381 - 13,600 [8,000]
T ^{1/2}	>1 year [1.9E-3]	3-8 months [2.8E-3]	4 years [5E-4]	2-8 weeks [1.2E-2]
Applicat- ion Rate	4 gal/10 linear ft 1% solution [12,405 mg/m ²]	4 gal/10 linear ft .24% sol. [12,405 mg/m ²]	4 gal/10 linear ft 2% solution [103,372 mg/m ²]	4 gal/10 linear ft 2% solution [103,372 mg/m ²]

Parameter	Chlorfenapyr	Cypermethrin	Permethrin
K _{oc}	12,000	160,000 [160,000]	22,000 [33,000]
T ^{1/2}	1.4 years	2-8 weeks [1.2E-2]	3-6 weeks [1.6E-2]
Application Rate	4 gal/10 linear ft .25% solution	4 gal/10 linear ft .5% solution [25,843 mg/m ²]	4 gal/10 linear ft .5% solution [25,843 mg/m ²]