



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF PREVENTION,
PESTICIDES AND TOXIC
SUBSTANCES

Memorandum

SUBJECT: Amendment to Ground Water Assessment of Metalaxyl for Registration Eligibility Document

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This document is presented as an amendment to the original ground-water assessment that was completed for the Registration Eligibility Document (RED). The document was prepared to provide further justification for the recommendations stated in the original RED. Also, one new recommendation has been added in order to be consistent with the regulations considered appropriate for other chemicals.



Recommendations

1. EFGWB recommends that the metalaxyl label be amended to include a ground-water advisory. This advisory should state:

"This chemical is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination."

2. EFGWB recommends that metalaxyl be considered a Restricted Use compound for ground-water concerns. The triggers for the Restricted Use Rule were developed to indicate the potential for a pesticide to leach to ground water. As illustrated on Figure 1, metalaxyl exceeds all seven of the proposed persistence and mobility triggers for Restricted Use, indicating that it has high potential to move to ground water. Limited monitoring has been conducted for metalaxyl, and few detections have been found in ground water to date. With an extensive monitoring program in metalaxyl use areas, it is likely that metalaxyl would also meet the detections trigger (number 8) for classification as a Restricted Use chemical.
3. EFGWB requests that the registrant propose a level in ground water that, if reached, would be appropriate for some form of regulatory action.

Discussion

In the initial ground-water assessment for the RED, metalaxyl was shown to exhibit the properties and characteristics associated with chemicals that have been detected in ground water. Metalaxyl is a persistent pesticide with an aerobic soil metabolism half-life of approximately six weeks. In addition, metalaxyl is very mobile with K_d values ranging from 0.43 to 1.40 L/kg in three different soils. Considering the nature of the chemical; i.e., highly persistent under certain conditions and very mobile in many soils, there is a strong possibility of movement to ground water, especially in vulnerable areas. This has been confirmed by the detections reported in the "Pesticides in Ground Water Database" (Hoheisel et al., 1992) which indicate that metalaxyl has had an impact on ground-water quality.

Metalaxyl is not oncogenic, mutagenic or teratogenic, its acute toxicity is low, and the risks to nontarget species are also low. Based on our current knowledge about human and ecological endpoints, metalaxyl is not likely to exceed the risk-based levels of concern. However, because the Level of Concern for ground-water quality has been exceeded by metalaxyl, EFGWB recommends several actions. A ground-water label advisory (previously recommended in 1993) should be placed on the metalaxyl label. Metalaxyl should also be considered for classification as a restricted use chemical for ground-water concerns. When compared to several other pesticides that have been recommended for restricted use (Figure 2), metalaxyl (parent) is shown to be extremely mobile and moderately persistent. The

degradate of metalaxyl (not illustrated on the figure), is also very mobile and is more persistent than the parent.

EFGWB also recommends that the registrant propose, as a condition of reregistration eligibility, to establish a level of metalaxyl in ground water that would necessitate further regulatory action. If this level were to be detected in ground water, regulatory action would be taken.

FIGURE 1

Physical and Chemical Characteristics of METALAXYL
Relative to EPA Restricted Use Criteria

		CHARACTERISTIC	RESTRICTED USE CRITERIA	REPORTED VALUE
PERSISTENCE	1	Field dissipation half-life	> 3 weeks, or	40 days (≈6 weeks)
	2	Lab-derived aerobic soil metabolism half-life	> 3 weeks, or	40 days (≈6 weeks)
	3	Hydrolysis half-life	< 10% in 30 days, or	≈200 days
	4	Photolysis half-life	< 10% in 30 days, and	≈400 days
MOBILITY	5	Soil adsorption: K_d	≤ 5 ml/g, or	0.43 - 1.40 ml/g
	6	Soil adsorption: K_{oc}	≤ 500 ml/g, or	16
	7	Depth of leaching in field dissipation study	75 cm, and	48 inches (122 cm)
DETECTIONS	8	Number of wells and states with detections	25 wells in 4 or more states, or	17 wells in 2 states
	9	Number of counties with detections > 10% of MCL/HA	3 counties at >40 ppb	0 counties above 40 ppb

Shaded area indicates that parameter exceeds trigger.

Restricted Use requires [(1 or 2 or 3 or 4) and (5 or 6 or 7)] and (8 or 9)

FIGURE 2

Physical and Chemical Characteristics of METALAXYL
Relative to Other Pesticides

	CHARACTERISTIC	Metalaxyl	Alachlor	Acetochlor	Picloram	Tebuthiuron
PERSISTENCE	Field dissipation half-life	40 days	18 days	36 days	278 days	2 years
	Lab-derived aerobic soil metabolism half-life	≈6 weeks	3 weeks	245 days	324 days	35.4 months
	Hydrolysis half-life	≈200 days	stable	stable	stable	>64 days
	Photolysis half-life	≈400 days	NA	stable	>384 hrs	39.7 days
MOBILITY	Soil adsorption: K_d	0.43 - 1.40	0.62 - 8.13	0.81-7.5	0.07-0.98	0.11-1.82
	Soil adsorption: K_{oc}	16 ml/g	190 (est)	74-428	16	4
	Depth of leaching in field dissipation study	48 inches	NA	12 inches	NA	>72 inches

NA = data not available