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CASE GS0187 PENDIMETHALIN STUDY 8 PM PM# 02/15/83

CHEM 108501 Pendimethalin

BRANCH EFB DISC 30 TOPIC 050525 GUIDELINE 40 CFR 163.62-9B/C/D

FORMULATION 00 - ACTIVE INGREDIENT

FICHE/MASTER ID 00046289 CONTENT CAT 01

O'Grodnick, J.P., and G.D. Dupre. 1974. Leaching characteristics of ^{14}C-Prowl and its degradation products following aging in Princeton sandy loam soil under greenhouse conditions: Report No. 74003-1. Unpublished study received Sep. 27, 1974 under 5F1556; prepared by Bio/dynamics, Inc., submitted by American Cyanamid Co., Princeton, NJ; CDL:094674-C.

SUBST. CLASS = S.

DIRECT RVW TIME = 3 1/2 (MH) START-DATE END DATE

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CONCLUSIONS:

Mobility - Leaching and Adsorption/Desorption

1. This study is scientifically valid.

2. Aged (30-day) residues of [^{14}C]pendimethalin were immobile in a sandy loam soil column after leaching with 22.5 inches of water over a 45-day period. All of the recovered radioactivity (~71% of applied) was found in the top 3 inches of the 12-inch soil column. No [^{14}C]pendimethalin residues were detected (<0.01 ppm or <0.1% of applied) in the leachate.

3. This study does not satisfy EPA Data Requirements for Registering Pesticides (1983) because it is unlikely that the treated soil was maintained at a constant temperature (greenhouse conditions) during the aging process and [^{14}C]pendimethalin residues were not characterized.

MATERIALS AND METHODS:

A mixture of 20 g of Princeton sandy loam soil (68% sand, 24% silt, 8% clay, pH 5.1, 3.6% organic matter) and 1.66 mg of 4-methyl-labeled [^{14}C]-pendimethalin (Prowl, specific activity 2.54 µCi/mg, American Cyanamid Co.) was placed in a nylon mesh bag and buried to a depth of 2 inches in a container of untreated sandy loam soil. The container was incubated at ~70% of field capacity for 30 days under greenhouse conditions.

A PVC column was packed with untreated Princeton sandy loam soil to a depth of 12 inches and saturated. The aged [^{14}C]pendimethalin-treated soil described above was added to the top of the column at 1.5 lb ai/A (13.4 g of the treated soil). The soil column was leached with 22.5 inches of water over a 45-day period (0.5 inch/day). Leachate was collected daily and assayed by LSC.

After 45 days, the column was separated into four 3-inch segments, which were then combusted. The CO_2 evolved was trapped and assayed for radioactivity by LSC.

REPORTED RESULTS:

All of the recovered radioactivity (~71% of applied) was found in the top 3 inches of the soil column (Table 1). No [^{14}C]pendimethalin residues were detected (<0.01 ppm or <0.1% of applied) in soil from the 3- to 12-inch depths or in the leachate.

DISCUSSION:

1. It is unlikely that the [^{14}C]pendimethalin-treated soil remained at a constant temperature during incubation in the greenhouse.

2. K_d values were not provided.

3. [^{14}C]Pendimethalin residues were not characterized.

Table 1. Distribution of radioactivity in a 12-inch column of Princeton sandy loam soil treated with aged [^{14}C]pendimethalin at 1.5 lb ai/A, and leached with 22.5 inches of water.[a]

Soil segment (inches)	[^{14}C]Pendimethalin residues	
	ppm	% of applied
0-3	1.04	71.1
3-6	ND[b]	ND
6-9	ND	ND
9-12	ND	ND
Leachate	ND	ND

[a] [^{14}C]Pendimethalin-treated soil was aged for 30 days prior to leaching.

[b] Not detected (<0.01 ppm or <0.1% of applied); observed counts were <2 times background counts.