4-1-85

(TDR03B) DATA EVALUATION RECORD PAGE 1 OF 4

CASE GS0179 TRIFLURALIN STUDY 11 PM PM# 08/07/84

CHEM 036101 Trifluralin

BRANCH EFB DISC 30 TOPIC 050525 GUIDELINE 40 CFR 163.62-9b/c/d

FORMULATION 90 - FORMULATION NOT IDENTIFIED

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Norris, F.A. 1979. Letter sent to D.D. Phillips dated June 12, 1979: Soil dissipation studies, ethoprop alone and in combination with trifluralin: Project No. 15915. Unpublished study received Mar. 19, 1981 under 2224-44; submitted by Mobil Chemical Co., Industrial Chemicals Div., Richmond, VA; CDL:244801-A.

SUBST. CLASS = S.

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CONCLUSION:

Dissipation - Combination Products and Tank Mix Uses

This study is scientifically invalid because the trifluralin concentrations in the soil samples were too variable to accurately assess the dissipation of trifluralin in soil. Data requirements for combination products and tank mix uses are currently not being imposed for this Standard.

MATERIALS AND METHODS:

Three kilogram portions of Hanover County, Virginia sandy loam soil (71.2% sand, 21.6% silt, 7.2% clay, 0.5% organic matter, CEC 4.5 meg/100 g, pH 6.4, 8.0% field moisture at 0.33 bar) and a southwestern Tennessee silt loam soil (13.6% sand, 76.0 silt, 10.4% clay, 0.7% organic matter, CEC 10.2 meg/100 g, pH 5.4, 23.4% field moisture at 0.33 bar) were air dried, sieved (#10 mesh), and spread on separate glass trays (30 x 45 cm). A solution containing 15 mg of trifluralin (test substance uncharacterized, source unspecified) dissolved in ethyl ether (100 ml) resulting in a concentration of 5 ppm (5.4 lb/A), was uniformly distributed over the soil. The same procedure was followed for a combination treatment where the trifluralin application was followed by an application of ethoprop at 5 ppm to the same soil. Control soils were treated with ether only, and two replicates of each treatment were prepared. Solvents in the treated soils were allowed to evaporate (30 minutes); the soils were placed in glass bottles, homogenized on a roller mill (30 minutes) and transferred to plastic pots (20 cm height x 17.8 cm diameter) for a soil depth of 15-18 cm. The pots were incubated in the dark at room temperature (18-22 C) and subirrigated weekly.

Samples (4-6 cores of 15-mm diameter extending to the bottom of the pots combined for a 100 g sample), were taken at 14 sampling intervals, homogenized, and frozen (-20 C) until analysis. Aliquots were analyzed for water content, and then trifluralin was extracted with residue values corrected for 0% moisture. Trifluralin analyses were performed using the standard published method (Pesticide Analytical Manual, Section 180.207) in which samples were extracted with methanol and partitioned into methylene chloride. The methylene chloride was evaporated and the residue dissolved in hexane, cleaned up on a Florisil column, dissolved in benzene and analyzed by GLC. Recoveries were >80%; the detection limit was 0.005-0.010 ppm.

REPORTED RESULTS:

Trifluralin concentrations in both sandy loam and silt loam soils were variable, ranging from 2.0 to 4.95 ppm and 1.35 to 5.35 ppm, respectively (mean values of two replicates) (Table 1). Trifluralin concentrations when applied in combination with ethoprop in both sandy loam and silt loam soils were also variable, ranging from 0.95 to 4.40 ppm and 1.05 to 5.20 ppm, respectively. There was no consistent trend of decline in residues with incubation time, but the relative dissipation of trifluralin was unchanged when applied in combination with ethoprop.

DISCUSSION:

1. Trifluralin concentrations in the soil samples whether applied alone or in combination with ethoprop were too variable to accurately assess the dissipation of trifluralin in the sandy loam and silt loam soils tested.

2. The soil moisture content during incubation was not reported.

3. The duration of the study (194 days) was insufficient to assess the half-life of trifluralin in these soils.

4. A test substance was uncharacterized.

5. A material balance was not provided.

6. Degradates were not identified.

Table 1. Trifluralin residues (ppm)[a] in sandy loam and silt loam soils treated with trifluralin at 5 ppm (5.4 lb/A), or with trifluralin at 5 ppm plus ethoprop at 5 ppm and incubated in the dark at 18-22 C.

Soil	Replicate	Sampling interval (days)[b]													
		0	2	4	7	10	14	21	28	42	52	78	105	144	194
						Trifluralin									
Sandy loam	1	1.6	5.1	4.1	4.6	5.3	2.2	3.4	3.2	2.2	3.6	3.5	3.8	2.6	2.5
	2	2.4	4.8	4.9	4.5	4.5	3.7	3.6	3.6	2.7	3.1	3.4	3.4	2.7	2.4
Silt loam	1	3.5	5.3	3.5	5.5	5.4	1.5	3.8	4.0	2.5	3.1	2.1	2.2	2.1	2.5
	2	3.9	5.4	4.6	3.7	3.3	1.2	4.5	4.5	4.0	3.7	2.9	3.4	1.9	1.9
						Trifluralin plus ethoprop									
Sandy loam	1	0.1	3.7	2.8	3.7	4.6	3.6	3.7	3.6	1.8	3.5	2.8	2.9	2.7	2.1
	2	1.8	3.4	4.2	4.2	4.2	3.9	2.0	2.9	1.6	2.0	3.1	3.2	2.6	2.7
Silt loam	1	4.1	--	4.4	4.6	4.7	0.8	3.5	1.8	2.9	3.8	4.4	1.3	2.5	2.5
	2	2.4	4.5	3.3	5.7	5.7	1.3	4.6	4.4	3.7	3.7	2.5	2.3	2.8	2.7

[a] Trifluralin residue concentration in ppm. All values corrected to 0% moisture.

[b] Days after initial application of trifluralin to soils.