CASE GS0178 GLYPHOSATE STUDY 23 (4-22-85) PM 25 06/16/83

CHEM 103601 Isopropylamine Glyphosate

BRANCH EFB DISC 30 TOPIC

FORMULATION 90 - FORMULATION NOT IDENTIFIED

FICHE/MASTER ID 00039381-E CONTENT CAT 0
Blackburn, R.D. 1975. Dissipation of glyphosate from pond water. In Determination of residues of glyphosate and its metabolite in aquatic use of Roundup herbicide.

SUBST. CLASS = S.

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CONCLUSIONS:

Field Dissipation - Aquatic and Aquatic Impact Uses

1. This study is scientifically valid.

2. Glyphosate (4 lb/gal, formulation unspecified) dissipated from a pond in Florida, treated at 460 ppb, with a half-life of between 14 and 21 days. Less than 1% of the applied was detected in the pond water 127 days posttreatment. Glyphosate was detected at a maximum concentration of 0.46 ppb in bottom sediments sampled 63 days posttreatment. The glyphosate degradate aminomethyhlphosphonic acid was not detected (<2.5 ppb) in bottom sediments.

3. This study does not fulfill EPA Data Requirements for Registering Pesticides because pond water and sediment were not characterized, the pattern of formation and decline of the degradate aminomethylphosphonic acid could not be determined because the data were illegible, more than one pesticide was applied to the test site and may have affected the dissipation of glyphosate from water, and the pattern of formation and decline of degradates other than aminomethylphosphonic acid was not addressed.

MATERIALS AND METHODS:

A pond (0.843 A in surface area x 6.3 ft average depth), located in Ft. Lauderdale, was treated with a combination tank mix of glyphosate (MON 0139, 4 lb/gal, formulation and source unspecified), at 8 lb ai/A (460 ppb), and Sterox NJ (MON 0011, 4 lb/gal, formulation and source unspecified), at 8 lb ai/A. Water samples were taken pretreatment, and at 0, 1, 2, 5, 8, 24, 48, and 72 hours, and 7, 14, 21, 36, 63, and 127 days posttreatment from the surface, middle, and bottom of the pond at five locations. Bottom sediment samples, in triplicate, were taken pretreatment, and at 7, 14, 21, and 36 days after treatment.

Glyphosate and aminomethylphosphonic acid were determined in water and soil as reported in Monsanto Agriculture Report No. 325, described in Study 17 (00039381-C). Recovery values from water samples fortified with glyphosate and aminomethylphosphonic acid, at 2.5-500 ppb, were illegible. Detection limits were 2.5 ppb for both compounds.

REPORTED RESULTS:

Glyphosate dissipated from a pond in Florida with a half-life of between 14 and 21 days (Table 1). Weighted average glyphosate concentrations decreased from 85.6% of the applied at 1 hour posttreatment to <1% of the applied 127 days after a pond in Florida was treated with glyphosate at 460 ppb. The distribution of glyphosate in the surface, middle, and bottom waters of the pond is presented in Table 1. Aminomethylphosphonic acid concentrations in water were illegible. The concentration of glyphosate in bottom sediment samples ranged from 0.15 to 0.46 ppb. Aminomethyphosphonic acid was not detected in any bottom sediment samples. Neither glyphosate nor aminomethylphosphonic acid were detected in water or sediment control samples.

DISCUSSION:

1. The pattern of formation and decline of the degradate aminomethylphosphonic acid could not be determined because the reported concentrations were illegible.

2. Sediment characteristics, such as textural analysis, pH, organic matter content, and CEC, were not submitted. Additionally, water characteristics such as oxygen content and suspended solids, were not presented.

3. Recovery values for glyphosate and aminomethylphosphonic acid could not be determined because the values were illegible.

4. More than one pesticide was applied to the test pond and may have affected the dissipation of glyphosate from water.

5. The formulation of both pesticides was described only as 4 lb/gal.

Table 1. Glyphosate concentrations in pond water treated with glyphosate at 460 ppb.

Sampling interval	Surface	Middle	Bottom	Weighted average	Percent of applied
	ppb				
1 hour	732	357	70	394	85.6
2	725	287	60	364	79.2
5	828	375	135	453	98.5
8	728	351	110	403	87.6
24	412	472	245	379	82.5
48	362	393	330	362	78.2
72	343	351	315	337	73.2
7 days	264	199	268	243	52.9
14	197	275	297	255	55.5
21	145	135	119	133	29.0
36	73	69	80	74	16.1
63	23	22	21	22	4.8
127	<5	<5	<5	<5	<1.0

[a] Average of duplicate samples; samples corrected for recovery values.

[b] Weighted average determined by:

(34.1% x ppb surface) + (34.1% x ppb middle) + (31.8% x ppb bottom)

Table 2. Glyphosate concentrations (ppb) in bottom sediments of a pond treated with glyphosate at 460 ppb.

Sampling interval (days)	Glyphosate	Aminomethylphosphonic acid
0 (control)	ND[a]	ND[a]
7	0.22	ND
14	0.27	ND
21	0.27	ND
36	0.15	ND
63	0.46	ND
127	0.24	ND

[a] Not detected; detection limit was 2.5 ppb.