CASE GS0178 GLYPHOSATE STUDY 14 PM 25 06/16/83

CHEM 103601 Isopropylamine Glyphosate

BRANCH EFB DISC 30 TOPIC (4-21-85)

FORMULATION 90 - FORMULATION NOT IDENTIFIED

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Kramer, R.M. 1975. Residues and persistence of glyphosate applied to a dry irrigation ditch. In Determination of residues of glyphosate and its metabolite in aquatic use of Roundup herbicide.

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CONCLUSIONS:

Field Dissipation - Aquatic and Aquatic Impact Uses

1. This study is scientifically valid.

2. Neither glyphosate nor aminomethylphosphonic acid were detected (<2.5 ppb) in two canal waters flooded ~6 months following treatment of glyphosate (test substance uncharacterized), at 5 lb ai/A, to two earthen-bottom dry canals located in Washington. Soil samples taken the day before the canals were filled (~6 months posttreatment) contained ~0.35 and 0.8 ppm glyphosate and aminomethylphosphonic acid, respectively, in each canal.

3. This study would not fulfill EPA Data Requirements for Registering Pesticides because the test substance was not characterized, soil samples were not characterized, complete water characteristics were not reported, rainfall data were not presented, and the formation and decline of degradates other than aminomethylphosphonic acid was not addressed.

MATERIALS AND METHODS:

One-half mile sections of two earthen-bottom dry irrigation canals located in Prosser, Washington (Canal A and Canal B), were treated with glyphosate (test substance uncharacterized, source unspecified), at 5 lb ai/A, on October 14, 1972. The canals were filled with water in the spring of 1973. Canal and water characteristics are presented in Table 1. Sampling stations were set-up 100 feet upstream from the treated site, and at 880, 1760, 2640, 5280, and 7920 feet downstream from the upper end of the treated area. Water samples (1 pint) were collected when the water front reached each station and subsequently at 15, 30, 45, 60, 90, 120, and 240 minutes. The sampling station located 2,640 feet downstream from the treatment site was sampled additionally at 8, 12, 24, and 48 hours.

Water samples were collected in polyethylene bottles from a median canal water depth. Soil samples (4-inch sampling depth) were collected from the banks of the canals at 260-foot intervals before and 1 day after treatment, and again in March before flooding the canals. Water and soil samples were analyzed for glyphosate and aminomethylphosphonic acid according to Monsanto Agricultural Research Report No. 325, described in Study 17 (00039381-C). The limit of detection was 2.5 ppb for both compounds. Recovery from water samples fortified with glyphosate at 2.5-100 ppb averaged 81.5%. Water samples fortified with aminomethylphophonic acid at 2.5-20 ppb ranged form 59-98%.

REPORTED RESULTS:

Average water temperatures for Canals A and B were 53 and 50 F, respectively.

Glyphosate and aminomethylphosphonic acid were not detected (<2.5 ppb) in any water samples. Soil samples taken the day before the canals were filled (~6 months posttreatment) contained ~0.35 and 0.8 ppm glyphosate and aminomethylphosphonic acid, respectively, in each canal. Neither parent nor degradate were detected in control water samples.

DISCUSSION:

1. The test substance was not characterized.

2. Soil sample characteristics, such as textural analysis, pH, organic matter content, and CEC, were not presented. In addition, water characteristics such as oxygen content and suspended solids were not reported.

3. Rainfall data were not reported.

4. Recovery values of glyphosate and aminomethylphosphonic acid from fortified soil samples were not reported.

5. Although soil samples were taken pretreatment and 1-day postreatment, no data were presented for these sampling intervals.

Table 1. Water characteristics.

	pH	Total alkalinity (ppm $CaCO_3$)	Total hardness (ppm $CaCO_3$)	Temperature (F)	Flow volume (cfs)
Canal A	7.3	70	65	53	30
Canal B	7.3	60	45	50	35