

US EPA ARCHIVE DOCUMENT

period of 30 days, each sample was treated with 103.5 μg of ^{14}C -BAS 514 H (9,285,333 dpm) which was added to the well water in 1 ml of deionized water. The resulting concentration for each soil and water system was about 1.5 ppm.

The treated samples were returned to the racks, sealed inside the containers and anaerobic conditions were reestablished. The samples were incubated in the dark at 25 °C. Duplicate samples were analyzed on 0, 14, 31, 60, 90 and 180 days after treatment (DAT). Before samples were removed, the atmosphere inside each container was drawn by vacuum through three successive traps containing carbitol, dilute H_2SO_4 , and dilute NaOH, respectively. At each sampling time, each sample was transferred to an individual centrifuge tube (no samples were combined), and the soil and water were separated from each other by centrifugation. The water was removed and the soil was left in the tube to dry. After drying, the soil was homogenized in a blender and aliquots were removed for combustion and refluxing with borate buffer (25 mM, pH 10.8) for 2 hours. This was followed by a further 2 hour refluxing with 1N NaOH.

The radioactivity in the water and trapping solutions was determined by liquid scintillation counting (LSC), and the radioactivity in the soil was determined by combustion. Radioactive residues contained in the trapping solutions were characterized by TLC if the trap contained >1% of the TRR, and in the other fractions if the TRR was >2%.

A flow diagram showing the analysis of the 180-DAT soil and water samples is shown in Figure 3.

The percentage of total radioactive residues (TRR) in each of the fractions was calculated relative to the total applied radioactivity (9,285,333 dpm).

DATA SUMMARY:

The mass balance for the two soil types used in the study at the various sampling times after treatment are shown in Table 11. The mass balance for the loam soil samples ranged from 90.2 to 99.9% TRR and averaged 96.8%. Mass balances for the clay soil samples ranged from 91.5 to 101.7% TRR and averaged 95.8%.

Quinlorac was only slightly metabolized when incubated in an anaerobic aquatic environment (Table 12). After 180 days of incubation in the loam soil and water experiment, 87.6% TRR was quinlorac, 2.1% was unextractable and 6.2% was distributed among 7 components, none of which were >1.0% TRR and consequently were not characterized. Similarly, after 180 days of incubation in the clay soil and water systems, 82.1% TRR was parent quinlorac, 1.8% was unextractable and 7.6% was distributed among 8 components, none of which were >1.0% TRR and consequently were not characterized.

Minimal ^{14}C -volatiles were produced after 180 days of anaerobic incubation of quinlorac (Table 1) and were not characterized since the % TRR was <1.

The data indicate that quinlorac is very persistent when incubated under anaerobic aquatic conditions since after 180 days 87.6 and 82.1% TRR was parent in the loam and clay soil systems tested, respectively. Since there

was only a small change in the concentration in quinclorac throughout the 180 day study, the half-life values of 1691 and 2263 days calculated for the loam and clay soils, respectively, are only very general approximations.

REVIEWER'S COMMENTS:

Previous studies [Stewart, J. January 1991. Freezer storage stability of quinclorac and its metabolites in soil - 0, 17, 21 month analysis. Registration Document No. 91/5016. Unpublished study performed and submitted by BASF Corp., Research Triangle Park, NC. MRID 417814-32 and Eswein, R. P. 1991. Freezer storage stability of quinclorac (BAS 514 H) in water: Final report. BASF Registration Document No. 9/5151. Unpublished study performed and submitted by BASF Corp. Agricultural Products, Research Triangle Park, NC. 31 pp. 422941-10] have shown that quinclorac is stable in water and soil that has been stored frozen for up to 21 and 39 months, respectively. Although no mention was made in this report in relation to length of storage of the samples, it appears that most of the samples were analyzed within 1-2 weeks of when they were collected. Therefore, no further information is needed related to storage stability of quinclorac in water and soil in regards to this study.