DATA EVALUATION RECORD

STUDY 2

CHEM 106701 Fosamine ammonium §161-2

FORMULATION--00--ACTIVE INGREDIENT

STUDY ID 40133702
Koeppe, M.K. 1986b. Photodegradation of [carbonyl-^{14}C]fosamine ammonium in pH 9 aqueous buffer. Laboratory Project ID AMR-566-86. Unpublished study performed and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE.

DIRECT REVIEW TIME = 4

REVIEWED BY: J. Harlin TITLE: Staff Scientist

EDITED BY: T. Colvin-Snyder TITLE: Staff Scientist

APPROVED BY: W. Spangler TITLE: Project Manager

ORG: Dynamac Corporation
Rockville, MD
TEL: 468-2500

APPROVED BY: Elizabeth A. Resek
TITLE: Chemist
ORG: EFGWB/EFED/OPP
TEL: 557-7709

SIGNATURE:

CONCLUSIONS:

EFGWB concludes that this study fulfills data requirements for photodegradation in water.

Fosamine ammonium did not degrade in a sterile aqueous pH 9 buffer solution irradiated with sunlight at 25 C for 30 days; fosamine ammonium also did not degrade in the dark control solution.

MATERIALS AND METHODS:

Carbonyl-labeled [^{14}C]fosamine ammonium (radiochemical purity >99%, specific activity 19.4 uCi/mg, du Pont) was added at 10.3 ppm to a sterile buffered pH 9 solution (0.01 M) in a water-jacketed beaker covered with a quartz lid (Figure 3). The solution was placed on a roof in Wilmington, Delaware (39 40' N latitude; 75 36' W longitude) and irradiated with

sunlight (cumulative radiation 143,521 watt-hrs/m^2) from August 11 through September 10, 1986 (Table 3). The temperature of the irradiated solution was maintained at 25 ± 1 C by circulating water through a thermostatically controlled bath. In order to trap volatiles, air (approximately 10 mL/minute) was drawn over the solution and then through a bottle containing 1 N sodium hydroxide. To serve as a dark control, an additional sterile aqueous pH 9 buffer solution treated with [^{14}C]fosamine ammonium at 9.2 ppm was placed in a beaker sealed with a rubber stopper, wrapped in aluminum foil, and incubated in the dark at 25 ± 1 C for 30 days. In order to trap volatiles, a centrifuge tube inserted in the stopper was filled with 1 N sodium hydroxide trapping solution and connected to the air over the hydrolysis solution with glass tubing (Figure 5). The irradiated and dark control solutions, and the sodium hydroxide trapping solutions were sampled at intervals up to 30 days posttreatment.

Immediately after sampling, the pH of each solution was measured. Duplicate aliquots of each test solution (50 uL) were analyzed for total radioactivity by LSC. The test solutions were then stored frozen for an unspecified period of time prior to TLC analysis. Two aliquots (10 uL) of each test solution were analyzed by TLC on silica gel plates developed in methanol:0.5 M ammonium carbonate (4:1). In order to confirm the results of the silica gel TLC analyses, two 10 uL aliquots of selected samples were analyzed by TLC on tellulose plates developed in 0.5 M ammonium carbonate:methanol:water (5:60:35). The samples were cochromatographed with reference standards of radiolabeled fosamine ammonium and carbamoylphosphonic acid (CPA). Radioactive areas were located and quantified using a TLC scanner and autoradiography, and identified by comparison to the reference standards. The sodium hydroxide trapping solutions were analyzed for total radioactivity by LSC.

REPORTED RESULTS:

Carbonyl-labeled [^{14}C]fosamine ammonium (radiochemical purity >99%), at 10.2 ppm, did not degrade in a sterile aqueous pH 9 buffer solution irradiated with sunlight (cumulative radiation 143,521 Watt-hours/m^2) at 25 ± 1 C for 30 days. Fosamine ammonium, at 9.2 ppm, also did not degrade in dark control solutions incubated at 25 ± 1 C. Throughout the study, fosamine ammonium comprised ≥99% of the recovered radioactivity in the irradiated and dark control solutions (Tables 6 and 7). Recoveries of total radioactivity in the test solutions ranged from 98.9 to 106% of the applied (Table 4).

PAGES 2.3 THROUGH 2.13 HAVE BEEN REMOVED FROM THIS DOCUMENT. THOSE PAGES CONSIST OF REGISTRANT-SUBMITTED DATA.