DATA EVALUATION RECORD

3/14/1991

STUDY IDENTIFICATION:

Garstka, T.A. October 1977. Oxyfluorfen Hydrolysis: TR No. 34H-77-30. Rohm and Hass Company, Spring House, Pennsylvania. MRID# 00096882.

REVIEWED BY:

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Date: MAR 14 1991

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TYPE OF STUDY: Hydrolysis

CONCLUSIONS:

EFGWB concludes that the study submitted satisfies data requirements for hydrolysis.

Based on the results of the study, oxyfluorfen is stable to hydrolysis at pH 4, 7 and 10.

MATERIALS AND METHODS:

^{14}C-oxyfluorfen (specific activity 384 mCi/g; radiopurity 98%) was used in the study. A pH 4-citrate/phosphate buffer (0.09M), pH 7-citrate/phosphate buffer (0.07M), and pH 10-carbonate/bicarbonate buffer (0.05M) were prepared and added to ^{14}C-oxyfluorfen to give nominal concentrations of 0.05 and 0.50ppm. Hydrolysis was carried out in the dark at 25 and 40 C. Sampling occurred immediately after the solutions were prepared (Day 0) and at Day 3, 10, 21 and 30.

Quantitation was done using thin-layer chromatography (TLC) and total radioactivity was determined by liquid scintillation counting (LSC).

REPORTED RESULTS:

The authors reported that while the concentration of soluble radioactivity in the 0.05ppm solution remained constant, there was a decline in soluble residue for the 0.50ppm solution (Table III). The authors concluded that since oxyfluorfen was only slightly soluble in water, it appeared that a 0.5ppm aqueous solution was

above the compound's solubility. The decline in soluble residue was due to its adsorption on the walls of the bottles. This assumption was supported by the counting data for the methanol rinses of the bottles following the last sampling date. The amount of ^{14}C retained by the glass bottles increased with decreasing temperature. ^{14}C recovered in the methanol rinses was approximately 6% for the 0.05ppm study and 14-66% for the 0.5ppm study.

Overall ^{14}C accountability was 87.6% for the 0.05ppm study and 67.6% for the 0.50ppm study. Again the authors concluded that the low and variable ^{14}C recovery at the higher concentration was due to the insolubility of the compound in water at that level (Tables IV-VI).

At each of the pH values tested, >97% of the radioactivity present after 30 days was parent oxyfluorfen (Table VII).

DISCUSSION:

EFGWB concludes that the study submitted satisfies data requirements for hydrolysis. However, the registrant should note the following points:

1. Those pH's found in the environment range from pH 5-pH 9, hence the requirement for hydrolysis studies to be conducted at pH 5, 7 and 9 (as stated in Subdivision N Guidelines). This study contained hydrolysis experiments at pH 4, 7 and 10; all future hydrolysis studies must be conducted at pH 5, 7 and 9.

2. The final buffer concentrations should be reported in addition to the buffer preparation procedure (buffer concentrations for this report were calculated by the reviewer).