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DATA EVALUATION RECORD

DPX-L5300 STUDY 1

CHEM 128887 DPX-L5300

BRANCH EAB

FORMULATION--00 - ACTIVE INGREDIENT

FICHE/MASTER ID 40245520
Ferguson, E.M. 1986. Photodegradation of [triazine-2-^{14}C]DPX-L5300 and [phenyl(U)^{14}C]DPX-L5300 in aqueous systems. Laboratory Project ID AMR-534-86. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE. No. 7F3540.

SUBST. CLASS = S

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CONCLUSIONS:

Degradation - Photodegradation in Water

This study is acceptable and fulfills EPA Data Requirements for Registering Pesticides by providing information on the photodegradation of triazine- and phenyl-labeled [^{14}C]DPX-L5300 in water.

SUMMARY OF DATA BY REVIEWER:

Triazine- and phenyl-labeled [^{14}C]DPX-L5300 (radiochemical purities 97%, specific activities 41.2 µCi/mg and 20.5 µCi/mg, respectively), at 10 ppm, were resistant to photolytic degradation in a sterile pH 9 aqueous buffered solution irradiated with natural sunlight for 716 hours (196,189 Watt-hours/m^2) at 25°C. In the irradiated solutions, DPX-L5300 declined from 91.6-93.5% of the applied immediately posttreat-

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ment to 79.3-83.8% of the applied at 716 hours (30 days) posttreatment. In the dark controls, DPX-L5300 concentrations declined to 82.9-84.5% of the applied at 716 hours posttreatment.

The major degradation route was cleavage of the sulfonylurea bridge to form triazine amine and sulfonamide. Triazine amine was then demethylated to either N-demethyl or O-demethyl triazine amine, while sulfonamide further decomposed to acid sulfonamide and/or saccharin. At 716 hours posttreatment, triazine amine accounted for a maximum of 6.5% of the recovered; N-demethyl triazine amine and O-demethyl triazine amine accounted for 3.8% and 1.1%, respectively.

A maximum of 2.8% of sulfonamide was recovered after 500 hours in the dark control, and acid sulfonamide plus saccharin (together maximum 3.5%) was recovered at 716 hours of irradiation. No degradates were unique to the dark control or irradiated samples. No volatilization was detected (<0.05% of total radioactivity at each sampling interval). The material balance at each sampling interval ranged from 97 to 109% of the applied. Triazine-labeled [^{14}C]DPX-L5300, at 10 ppm, degraded in sunlight-irradiated and nonirradiated sterile aqueous buffered solutions of pH 7 with calculated half-lives of 311 and 381 hours, respectively, and in irradiated and nonirradiated solutions of pH 5 with a half-life of <20 hours (from 88.2 to <5% of the recovered). At pH 9, the calculated half-lives are greater than 200 days.

DISCUSSION:

1. Acid sulfonamide and saccharin were not resolved well using HPLC (R_f 14.5-15.0), and were reported as a sum rather than individually.

2. DPX-L5300 is most stable to hydrolysis at pH 9; therefore, photodegradation of the phenyl-labeled [^{14}C]DPX-L5300 was studied only at pH 9.

3. Absorption of light by DPX-L5300 occurs primarily at wavelengths <290 nm. Stability to photodegradation is therefore the predicted behavior.