8-30-88

DATA EVALUATION RECORD

STUDY 1

SHAUGHNESSY NO. 128994 MON-15151 Sec. 161-1

FORMULATION--00--ACTIVE INGREDIENT

MRID NO. 40638627
Pantano, L.K. 1988. The hydrolysis of MON-7200/15100, 3,5-pyridine-dicarbothioic acid, 2-(difluoromethyl)-4-(2-methylpropyl)-6-(trifluoromethyl)-,S,S-dimethyl ester. Laboratory Project No. MSL-7690. R.D. No. 866. Unpublished study prepared and submitted by Monsanto Agricultural Company, St. Louis, MO.

DIRECT REVIEW TIME = 24

REVIEWED BY: W. Hurtt TITLE: Staff Scientist

EDITED BY: K. Patten TITLE: Task Leader

APPROVED BY: W. Spangler TITLE: Project Manager

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

APPROVED BY: A. Reiter
TITLE: Chemist
ORG: EAB/HED/OPP
TEL: 557-7709

allan J. Reiter
8-30-88

SIGNATURE:

CONCLUSIONS:

Degradation - Hydrolysis

This study is acceptable and fulfills EPA Data Requirements for Registering Pesticides by providing information on the hydrolysis of ring-labeled [$^{13}C/^{14}C$]MON-7200/15100 (the active ingredient of MON-15151) in sterile aqueous buffered solutions at pH 5, 7, and 9.

SUMMARY OF DATA BY REVIEWER:

Ring-labeled [$^{13}C/^{14}C$]MON 7200/15100 (radiochemical purity of the 1:1 isotopic mixture >99.0%), at 1 ppm, did not degrade in sterile deionized water or buffered pH 5 and 7 solutions at 25°C over a 30-day period. In a buffered pH 9 solution after 30 days, <2% of the test substance had degraded to 2-(difluoromethyl)-4-(2-methylpropyl)-5-[(methylthio)carbonyl]-6-(trifluoromethyl)-3-pyridinecarboxylic acid (normal acid; II).

The registrant-calculated half-life in the pH 9 buffer solution was 1053 days (2.9 years).

DISCUSSION:

1. HPLC procedures were modified during the course of the experiments to include an acetonitrile wash when it was determined that MON 7200/15100 was adhering to the walls of the HPLC syringe. The registrant stated that the correction for syringe adhesion had only a slight effect on the results of the experiments.

2. Apparent typographical errors exist with regard to sample (tube) number versus days posttreatment. Sample D25-48 (Table 9) was used for critical confirmation analyses, presumably at 25 days. In the original document, this sample was variously referenced as both 25 and 30 days in Figure 10, and as 30 days in Figures 11, 12, and 13 and in various portions of the text.

3. A hydrolysis study was conducted with MON 7200/15100 using sterile rice paddy water (pH 7.8); no degradation was observed during 30 days of incubation. The data were not evaluated in detail because they are not required by current EPA guidelines for registering pesticides.

MATERIALS AND METHODS

MATERIALS AND METHODS:

Ring-labeled [$^{13}C/^{14}C$]MON 7200/15100 [3,5-pyridinedicarbothioic acid, 2-(difluoromethyl)-4-(2-methylpropyl)-6-(trifluoromethyl)-,S,S-dimethyl ester; radiochemical purity of the 1:1 isotopic mixture >99.0%, specific activity 18.58 mCi/mmol, Monsanto Company] was added to sterile deionized water and to sterile buffered water adjusted to pH 5, 7, and 9 to make a final concentration of 1 ppm. The solutions were incubated in the dark at 25°C in culture tubes, and samples were taken at 0, 2, 4, 9, 15, 21, 25, and 30 days after treatment.

Total radioactivity at each sampling interval was determined by LSC. Quantification of the effluent from HPLC analyses was determined by LSC or radioactivity flow detection. The identification of degradate structures was based upon comparisons between retention times of the radioactive peaks of the test samples and the UV peaks of the coinjected non-radiolabeled standards. Confirmation of degradate structure was determined by HPLC/MS analysis of the 25-day samples.

STUDY AUTHOR(S)'S RESULTS AND/OR CONCLUSIONS

Dithiopyr Science Review

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