4.21-89

DATA EVALUATION RECORD

DPX-L5300 STUDY 9

SHAUGHNESSY No. 128887
COMMON NAME: DPX-L5300
CHEMICAL NAME: Methyl 2-[[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl) methylamino] carbonyl] amino] sulfonyl] benzoate
FORMULATION: Dry flowable
DATA REQUIREMENT: Terrestrial Field Dissipation (164-1)

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(1) FICHE/MASTER ID 40245527
Ryan, D.L., and R.F. Dietrich. 1987. Terrestrial field dissipation study of [triazine-2-^{14}C]DPX-L5300 conducted in the United States. Laboratory Project ID AMR-530-86. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE. No. 7F3540.

(2) FICHE/MASTER ID 40927206
Ryan D.L. 1988. Supplement To: Terrestrial field dissipation study of [triazine-2-^{14}C]DPX-L5300 conducted in the United States. Laboratory Project ID AMR-530-86. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE. No. 7F3540.

SUBST. CLASS =

DIRECT RVW TIME = 6

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CONCLUSIONS:

Field Dissipation - Terrestrial

(1) The study is acceptable for supplemental information, but does not satisfy the terrestrial field dissipation (164-1) data requirement because freezer storage stability data were not provided, and the methods of soil treatment and sampling do not conform to guidelines. Also, data derived from samples collected at day 15, month 3, and month 5 post-treatment in the Illinois portion of the study and at day 7 and month 5 post-treatment in the Idaho study are suspect because of large fluctuations in the material balances. In addition, no data were provided on past average monthly rainfalls. Therefore, it was not possible to determine if any of the observed monthly rainfalls during the studies was far enough below past monthly averages to require supplemental irrigation. Even if the above deficiencies were not present, the study would have only partially satisfied the data requirement because the fate of the phenyl portion of the molecule was not followed.

(2) Triazine labeled [^{14}C]DPX-L5300 was applied at an exaggerated rate of 35 g ai/ha (the maximum label rate is 18 g ai/ha) to an Idaho silt loam soil (pH 8.3; organic matter 1.7%) and a Illinois silty clay loam soil (pH 7.1; organic matter 5.0%). The DPX-L5300 dissipated from the surface 0-5" soil layers with half-lives of 9 days (Idaho) and 4 days (Illinois) primarily by hydrolysis of the sulfonyl-urea linkage. The major triazine labeled degradate in both soils was triazine amine which reached a maximum concentration in the 0-5" surface soil layer during the first 1-2 weeks of DPX-L5300 degradation and then appeared to be relatively resistent to both leaching and degradation for the duration (17 months) of both studies. Despite a total cumulative rainfall of 63.1 inches over the 17 month duration of the Illinois study, no significant levels of radioactivity were detected in samples collected below 5" depth down to the maximum sampled depth of 14 inches. No significant levels of radioactivity were detected below 5 inches depth in the Idaho study either, but the total cumulative rainfall in that study over the 17 month study duration was only 10.9 inches.

SUMMARY OF DATA BY REVIEWER:

In silt loam soil (1.7% organic matter; pH 8.3) contained within stainless-steel cylinders in the field in Idaho, triazine-labeled [^{14}C]DPX-L5300 (radiochemical purity >96%, specific activity 41.2 uCi/mg, formulated in solution with the WP inert ingredients), at 35 g ai/ha, degraded with a half-life of 7-14 days (calculated 9 days). No significant radioactivity above background was detected in samples collected below 5" depth down to the maximum depth of 14". Triazine amine, the major triazine moiety degradate, peaked at 68% (0.052 ppm) in the 0-2" layer and remained at relatively constant levels for the 17 month duration of the study. At 17 months posttreatment, triazine amine still accounted for 62% of applied (0.04 ppm) in the 0-2" layer. N-demethyl triazine amine and O-demethyl triazine amine collectively comprised 10% of the applied radioactivity in the

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0- to 2-inch layer throughout the study. DPX-L5300 acid was not detected in any samples.

In silty clay loam soil (5.0% organic matter, pH 7.1) contained in cylinders in Illinois, triazine-labeled [^{14}C]DPX-L5300, at 35 g ai/ha, degraded with a half-life of 4-8 days (calculated 5 days). No significant radioactivity above background was detected in samples collected below 5" depth down to the maximum depth of 14". By 8 days post-treatment, the major triazine moiety degradate (triazine amine) comprised 68% of the applied radioactivity (0.049 ppm) and remained at relatively constant levels during the 17 month study. At 17 months post-treatment, triazine amine accounted for 60% of applied radioactivity (0.042 ppm). The minor degradates, O-demethyl triazine amine and N-demethyl triazine amine collectively comprised <10% of the applied (0.008 ppm) throughout the 17 month study interval. DPX-L5300 acid was not detected in any sample.

DISCUSSION:

(1) Freezer storage stability data were not provided even though the reported half-lives of DPX-L5300 are less than 14 days.

(2) The fate of the phenyl portion of the molecule was not followed because the phenyl portion was not labeled. In response to a call for data using phenyl labeled [^{14}C]DPX-L5300 at the same sites, the study author stated in the supplement that such data was unnecessary because the fate of the phenyl portion of the molecule had already been determined in several field dissipation studies using DPX-T6376 which degrades to phenyl moiety degradates identical to those of DPX-L5300. However, the cited studies were conducted in geographical locations, in soils, and under conditions different from those in this study.

(3) In the Illinois study, the material balance was adequate for the first three sampling intervals (through day 8) and a half-life for the parent compound may be estimated. However, the total recovery of radioactivity became quite variable beyond the first 8 days, decreasing to 58% of the applied at 15 days post-treatment, increasing to 85% at 30 days, decreasing to 56% at 3 months, increasing to 108% at 5 months , and then remaining at 77 to 86% the remainder of the study. In the Idaho study, material balances decreased from 94% at 3 days post-treatment to 76% at 7 days post-treatment, and then increased to 86% at day 14. A similar fluctuation occurred at 5 months post-treatment. Such variability may be due to the fact that data for each interval were obtained from a single sample that had been treated separately from other samples (one soil cylinder per interval), rather than from soil sampled from the same field treated with a single application, as is usually the case in a field dissipation trial. Thus, differences in the actual application rate, as well as in sample removal, storage, and handling, may lead to large variability between samples.

(4) No comparison between the observed monthly rainfalls and average past monthly rainfalls was provided for either the Illinois or Idaho study. Therefore, it could not be determined if any of the monthly rainfalls should have been supplemented by irrigation.

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