4.21-89

DATA EVALUATION RECORD

DPX-L5300 STUDY 8

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: 14-Flowable concentrate
DATA REQUIREMENT: Terrestrial Field Dissipation (164-1)

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(1) FICHE/MASTER ID 40245524
Dietrich, R.F. 1987. Terrestrial field dissipation of [phenyl(U)-^{14}C]DPXL5300 and [triazine-2-^{14}C]DPX-L5300 at Stine Farm in Newark, DE. Laboratory Project ID AMR-759-87. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE. No. 7F3540.

(2) FICHE/MASTER ID 40927205
Dietrich, R.F. 1988. Supplement To: Terrestrial field dissipation of [phenyl(U)-^{14}C]DPXL5300 and [triazine-2-^{14}C]DPX-L5300 at Stine Farm in Newark, DE. Laboratory Project ID AMR-759-87. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE. No. 7F3540.

SUBST. CLASS = S

DIRECT RVW TIME = 6

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SIGNATURES: H Nelson

CONCLUSIONS:
Field Dissipation - Terrestrial

(1) This study is acceptable for supplemental information, but does not partially satisfy the terrestrial field dissipation (164-1) data requirement because freezer storage stability data were not provided, and the depth of leaching may not have been adequately defined. 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 study was far enough below the past monthly average rainfall to require supplementing the rainfall with irrigation.

(2) Triazine and phenyl labeled [^{14}C]DPX-L5300 applied to a Delaware Keyport silt loam soil (pH 5.1; organic matter 2.1%) in June 1985 at an exaggerated rate of 70 g ai/ha (18 g ai/ha is the maximum label rate) dissipated from the surface 0-5" soil with a half-life of < 1 day. The major degradates formed were triazine amine and ester sulfonamide/saccharin. Triazine amine reached a maximum concentration of 0.137 ppm in the 0-2" soil segment at 3 days post-treatment and then gradually declined to 0.048 ppm at 78 weeks post-treatment (Table VI). Ester sulfonamide/saccharin reached a maximum concentration of 0.136 ppm in the 0-2" soil segment at 1 week post-treatment, declined by over 50% in 7 weeks to 0.049 ppm at 8 weeks post-treatment, and declined to 0.003 ppm at 78 weeks post-treatment (Table IV). Despite a total cumulative rainfall of 61.3 inches over the 78 week duration of the study, no significant radioactivity above background was detected in samples collected below 5 inches down to the maximum sampled depth of 14 inches.

SUMMARY OF DATA BY REVIEWER:

Triazine- and phenyl-labeled [^{14}C]DPX-L5300 (radiochemical purities >96%, specific activities 41.2 and 20.5 uCi/mg, respectively; treatment solutions contained the currently recommended formulation ingredients), at 70 g ai/ha, dissipated with a half-life of <1 day in field "plots" (4 inch diameter stainless-steel cylinders) of Keyport silt loam soil (2.1% organic matter; pH 5.1) located in Newark, Delaware, in June, 1985. At 1 week posttreatment, parent DPX-L5300 was <0.01 ppm in the 0- to 2-inch soil depth. Triazine amine was the major triazine moiety degradate of the triazine-labeled [^{14}C]DPX-L5300, declining in the 0- to 2-inch depth from 90% of the applied radioactivity (0.137 ppm) at 3 days posttreatment to 56% of the applied (0.048 ppm) at 78 weeks posttreatment; O-demethyl triazine amine was also identified at up to 6% of the applied (0-2 inch segment; 8 weeks). Saccharin/ester sulfonamide were the major phenyl moeity degradates of the phenyl-labeled [^{14}C]DPX-L5300, declining in the 0- to 2-inch depth from 78% of the applied radioactivity (0.136 ppm) at 1 week posttreatment to 2% of the applied (0.003 ppm) at 78 weeks posttreatment. The majority of the radioactivity remained in the 0- to 2 inch soil depth with ≤35% and <2% of the applied detected in the 2- to 5-inch and 5- to 14-inch depths, respectively. Total recovered

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radioactivity declined from 102 to 18% in the soil treated with the phenyl labeled material, and from 104 to 66% in soil treated with the triazine labeled [^{14}C]DPX-L5300; the losses were attributed to conversion to $^{14}CO_2$.

DISCUSSION:

(1) Freezer storage stability data were not provided.

(2) The study author indicates in the supplement that the small quantities of radiation detected in the 9-14 inch segments of some of the soil samples are only slightly above the mean background level and therefore, were erroneously attributed in the original study report to the leaching of applied radioactivity. However, even if that is correct, sampling to a maximum depth of 14 inches may not have been deep enough to adequately define the depth of leaching for the following reasons:

(a) The results of the Keyport silt loam soil column leaching study using triazine labeled [^{14}C]DPX-L5300 (see study 7-MRID #40245523) suggests that DPX-L5300 and its degradates containing the triazine moiety (primarily triazine amine) are relatively immobile in Keyport silt loam (only 2.3% and 1.0% of applied radioactivity were detected in eluates from 12" unaged and aged (1 day) columns, respectively). However, the results of the Keyport silt loam soil column study using phenyl labeled [^{14}C]DPX-L5300 (see study 6-MRID #00148653) indicates that degradates of DPX-L5300 containing the phenyl moiety are relatively mobile in Keyport silt loam (degradates containing the phenyl moiety were detected at levels exceeding 52% and 31% of applied radioactivity in eluates from 12" unaged and aged columns, respectively).

(b) Although material balances were 94-104% of applied during the first four weeks of the field dissipation study, they dropped to $\leq$ 60% at 8 weeks and thereafter. The study author indicates that the decreases in material balances are due to the formation and subsequent volatilization of $^{14}CO_2$ during degradation. EFGWB agrees that the loss of $^{14}CO_2$ is probably at least partially responsible for decreases in material balances. However, decreases in material balances also coincided with substantial increases in cumulative rainfall (Table II), and the results of a laboratory mobility study indicate that degradates containing the phenyl moiety may be relatively mobile in Keyport silt loam soil. Therefore, the possibility of degradates with the phenyl moiety leaching below the maximum sampling depth of 14 inches and contributing substantially to decreases in material balances cannot be discounted.

(3) The registrant reported the sum of the ester sulfonamide and saccharin concentrations because the slightly basic extraction conditions, necessary to maintain the integrity of the parent compound, tended to convert the degradate ester sulfonamide to saccharin. Although the compounds were adequately resolved by the

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reported analytical methods, their individual concentrations may not have been an accurate reflection of what was actually present in the soil at the time of sampling. Any inability to accurately distinquish between the ester sulfonamide and saccharin in soil may be a problem if the two compounds have greatly differing toxicities. Although an alkaline extraction may have been necessary to accurately determine the parent compound in soil due to its rapid hydrolysis in acidic solutions, it may have been possible to extract other aliquots of the same soil samples with acidic solutions to more accurately determine the relative levels of the ester sulfonamide and saccharin in soil.

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

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