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UNDATED

DATA EVALUATION RECORD

STUDY 3

CHEM 068102 Vedexil §163-1

FORMULATION--00--ACTIVE INGREDIENT

STUDY ID 41764601
Cameron, B.D., B.E. Hall, and R. Jackson. 1990. The adsorption and desorption characteristics of [^{14}C]-MTC in soil. IRI Project No. 380212. Report No. 7439. Unpublished study performed by Inveresk Research International, Tranent, Scotland, and submitted by Buckman Laboratories, Memphis, TN.

DIRECT REVIEW TIME = 5

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CONCLUSIONS:

Mobility - Leaching and Adsorption/Desorption

1. This study is unacceptable and cannot be used to fulfill data requirements.

2. Based on batch equilibrium experiments, vedexil is very mobile in sand, sandy loam, silt loam, and silty clay soils, with Freundlich K_{ads} values of 0.3934-0.8140.

3. This study is scientifically sound but does not meet Subdivision N guidelines for the following reason:

the adsorption of vedexil to the soil was determined only by the decrease in concentration of vedexil in the supernatant. The soils were not analyzed following adsorption or desorption to provide complete material balance;

no other analytical method, beside LSC, was used to confirm the presence of parent vedexil or its degradates in the supernatant.

4. Since the soils were not analyzed to confirm adsorption and to complete material balance and since other analytical techniques such as HPLC and GC were not used to confirm the presence of parent vedexil or its degradates in the supernatants, the problems with this study cannot be resolved with submission of additional data. A new study must be submitted.

METHODOLOGY:

Sand, sandy loam, silt loam, and silty clay soils (Appendix 3) were oven-dried and sieved (2-mm). Based on preliminary batch equilibrium experiments, a 2-hour equilibration time and a 1:5 soil:solution ratio were selected for the definitive experiment.

Methyl-labeled [^{14}C]vedexil (radiochemical purity >98%, specific activity 13.1 mCi/mMol, Sigma Chemical `ompany) plus unlabeled vedexil (purity not reported) were dissolved at nominal concentrations of 0.1, 0.2, 0.5, and 1.0 mg/mL in a 0.01 M $CaCl_2$ solution. Duplicate soil subsamples (2 g) and aliquots (10 mL) of the treated solutions were placed in screw-capped glass tubes. The soil:solution slurries were equilibrated on a wrist-action shaker in the dark (temperature unspecified) for 2 hours. Following equilibration, the soil:solution slurries were centrifuged and the supernatant were decanted; duplicate aliquots of the supernatant were analyzed by LSC. The amount of vedexil adsorbed to the soil was determined by subtraction of background count rates from sample count rates.

To determine desorption potential, the decanted supernatant was replaced with an equivalent amount of pesticide-free 0.01 M $CaCl_2$ solution. The soil:solution slurries were equilibrated by shaking on a wrist-action shaker for 2 hours (temperature unspecified) in the dark, and then centrifuged. Duplicate aliquots of the supernatant were removed and analyzed by LSC.

DATA SUMMARY:

Based on batch equilibrium studies, methyl-labeled [^{14}C]vedexil (radiochemical purity >98%), at nominal concentrations of 0.1, 0.2, 0.5, and 1.0 mg/mL, was very mobile in sand, sandy loam, silt loam, and silty clay soil:$CaCl_2$ (1:5) slurries that were incubated in the dark (temperature unspecified) for 2 hours. Freundlich K_{ads} values

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were 0.8140 for the silty clay soil, 0.4836 for the silt loam soil, 0.4447 for the sand soil, and 0.3934 for the sandy loam soil; respective K_{oc} values were 166.1, 86.36, 38.67, and 43.23 (Table 4).

Following desorption, 89.68-92.64% of the applied radioactivity remained in solution (Table 5). K_{des} values were 2.737 for the silty clay soil, 3.274 for the silt loam soil, 3.422 for the sand soil, and 2.913 for the sandy loam soil (Table 4).

COMMENTS:

1. The temperature at which the study was conducted was not reported.

2. The soils were not analyzed after equilibration to confirm adsorption and to provide a complete material balance. The adsorption of vedexil to the soil was determined only by the decrease in concentration in the supernatant. Material balances of 89.68-92.64% of the applied were based on the concentration of vedexil in solution following desorption.

3. The preliminary experiment conducted to determine equilibration time was conducted using the sand soil. The study authors reasoned that the sand soil would have the least adsorption of the test material and the longest equilibrium time, since the sand s il contained the lowest clay and organic matter contents.

4. A preliminary experiment indicated that [^{14}C]vedexil did not adsorb to the glass surface of the test tubes; >97% of the applied remained in solution after 24 hours.

6. Recovery efficiencies and method detection limits were not reported.