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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: ID# 109901 [RCB #436] Triadimefon (BAYLETON® Technical Fungicide). Groundwater Data Call-in (Acc.# 255890)

FROM: W. L. Anthony
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William L. Anthony

THRU: Charles L. Trichilo, Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: C. Lewis and G. Werdig PM-50
Data Call-in
Registration Division (TS-769)

and

Sam Creeger, Section Head
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Residue Chemistry Branch and Exposure Assessment Branch are requested to evaluate the adequacy of the data submitted for triadimefon (Bayleton® Technical Fungicide) as a part of groundwater data call-in.

The Mobay Chemical Corporation sells triadimefon as the technical in a formulation or end-use product under the trade name, Bayleton®.

Data submitted are summarized as follows:

Physical and chemical characteristics (40 CFR 158 Sub D)

Triadimefon (pure form) is produced as white-tan crystals. M.W. 293.7, M.P. of 76°C.

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(S 63.8) Water Solubility

Solubility of the technical was determined by Column elution. Weighed samples were individually passed through a florisil column at a constant elution rate. The concentration of each eluate was measured by UV at 222 nm. The mean for solubility of the a.i. (pure form) in water was 75.6 ± 25 mg/L.

The discrepancy between the previous value of 260 mg/L (July 27, 1974) and the present value may be explained by the different polymorphic crystalline structures for triadimefon. It is known that three crystalline forms of this a.i. exists, each with solubility differences.

It is believed that the reference standard used in the 1974 determination may have contained more of the symetrical crystalline form which was more soluble than the other two forms. The new value was obtained by using a new reference standard with a purity of 99.8%.

(S 63.9) Vapor Pressure

Under the Pesticide Assessment Guidelines - Revised, the vapor pressure for triadimefon is not required as the melting point of the pure form has been shown to be greater than 30°C, i.e., 76°C for technical (PP#4E3088). M.P. in Farm Chemical Handbook (1981) gives range from 72° to 78°C.

Although not required, the company did submit vapor pressure at 6.2×10^{-7} at 20°C. Measurement was accomplished by use of vapor pressure balance technique according to OECD Guidelines, #104.

(S 63.11) Octanol/Water Partition Co-efficient

The octanol/water partition co-efficient (K_{ow} was determined by two methods, i.e. the recommended, OECD Guidelines for testing chemicals, #107 and (2) by radio-assay using the a.i. in which the phenyl group has been ^{14}C uniformly labeled.

(1) The OECD Method: Samples of varying weight were dissolved in equal volumes of octanol and water. The concentration of the solute in each solvent was determined by GC. The coefficient, K_{ow}, was determined as 810.6.

(2) Radio-assay technique: The uniformly labeled ^{14}C-phenyl group on the triadimefon molecule was added to equal volumes of water and octanol containing varying concentrations of cold triadinefon. The solubility of the a.i. in each solvent (water and octanol) was determined quantitatively by GC. The partition co-efficient was determined by the dpm count in each solvent. K_{ow} = was determined as 1011.

Summary

Based on solubility of triadimefon in water to be 0.06035 mg/ml or 60.35 ppm and 40 mg/ml or 40,000 ppm in octanol the average K_{ow} for Bayleton was reported as 912 at 20°C.

Conclusion and Recommendation

EAB permitting, we consider the supplied data on (a) water solubility, (b) vapor pressure, and (c) octanol/water co-efficient are adequate to be included in the registration standard.

TS-769:RCB:W.Anthony:vg:CM#2:Rm810:X77384/2/13/85
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