

EEE BRANCH REVIEW

DATE: IN _____ OUT _____ IN 8/29/77 OUT 9/23/77 IN _____ OUT _____

FISH & WILDLIFE

ENVIRONMENTAL CHEMISTRY

EFFICACY

FILE OR REG. NO. 9538-L and A

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED 4/15/77

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED 3C1D-2B-yes

TYPE PRODUCTS(S): I, D, H, F, N, R, S Plant Growth Regulator

DATA ACCESSION NO(S) . _____

PRODUCT MGR. NO. Taylor (25)

PRODUCT NAME(S) Flo-Mo 810 Sucker

COMPANY NAME Sellers Chemical Corporation

SUBMISSION PURPOSE Use on tobacco

CHEMICAL & FORMULATION Fatty alcohols

(C6-o.4%, C8-45.1%, C10-54.5%)-L

(n-Decanol-79%)-A

(1)

- 1.0 Introduction
- 1.1 Active ingredients:
Fatty alcohol 85%
(C₆-0.4%, C₈-45.1%, C₁₀-54.5%)-L; (C₁₀-79%)-A
- 1.2 Use: Control of sucker growth on tobacco
- 2.0 Directions for use:
See E.C. Review #9538-EUP, 3/5/76
- 3.0 Discussion of data:
Data submitted by reference.
- 3.1 Water solubility:
n-octanol-165ppm
n-decanol-8ppm
- 3.2 Partition Coefficients and Their Uses. Chem. Reviews,
Vol. 71, pp.525-616, 1971.
This ancillary study is a compilation of partition coefficients. From this paper, the applicant calculated the partition coefficients (ratio of concentration of pesticide in octanol to that in water) as 6,060 for octanol and 125,000 for decanol.
- 3.3 Adsorption by soils:
A simple relationship between soil adsorption of organic chemicals and their octanol/water partition coefficients. G. G. Briggs, Proceedings 7th British Insecticide and Fungicide Conference (1973), p.83.

The adsorption of 30 unionized compounds by soils was correlated with their partition coefficients in four different soils.
$$\log P_1 = a \log P_2 + b$$

where P₁ is the partition coefficient between soil organic matter and water and P₂ is the partition coefficient between octanol and water. By using this equation, the applicant calculated that the partition coefficient between soil and water is 400 for octanol and 2000 for decanol, indicative of very high adsorption.
- 3.4 Hydrolysis:
Organic chemistry textbooks were cited as indicating no hydrolysis reactions for alcohols.

- 3.5 Photolysis:
 Photochemistry, John Wiley and Sons, Inc., N.Y.,
 pp.441-445, 1966
- Referenced data show that alcohols are not readily subject
 to photolysis. Only light below 200 nm is absorbed by
 alcohols, and then only moderately.
- 3.6 Teaching Studies:
 Based upon the paper cited in 3.3, octanol and decanol would
 have low mobility in soils.
- 3.7 Volatilization:
 Calculation of volatility from equations in the Regulations,
 p.26889, show that octanol and decanol have high volatility
 rates. We defer to toxicology for the significance of this
 data.
- 3.8 Soil Metabolism:
 An untranslated study in German was referenced. We cannot
 review this data until it is translated into English. The
 applicant states that degradation studies with decanol
 were not feasible because of its low solubility in water.
 This is a poor rationalization. Pesticides which are less
 soluble in water than decanol have been studied extensively.
- Another reference, "Biological Oxidation of Hexadecanol
 Under Laboratory Conditions," J. AWWA, Vol. 49, 7,
 pp.849-859 (1957), was cited indicating microbial degrad-
 ation. The applicant has extrapolated the results from
 this study to octanol and decanol. Data in our files
 indicate that decanol and octanol are degraded to
 CO₂ by microorganisms (Advances in Microbial Physiology,
 Vol. 6, 1971, pp.1-43).
- A referenced study by J. Tancogne is in French and has
 not been included with the submission. We cannot evaluate
 this study until we have a translated copy of it.

4.0

Recommendations:

We defer to toxicology and environmental safety to determine the significance of data submitted and to determine if additional environmental chemistry data will be needed.

Comments on octanol and decanol are as follows:

1. Decanol and octanol are natural products found in the environment. Natural waxes, such as beeswax and plant wax, contain esters of long-chain monohydric alcohols and fatty acids.
2. Plants are able to degrade decanol and octanol.
3. Microorganisms dehydrogenate these fatty alcohols to fatty acids followed by β -oxidation and respiratory metabolism to CO_2 .
4. Octanol and decanol are registered by FDA for use in food and in the synthesis of food components (Federal Register, Vol. 36, No. 205, Oct. 22, 1971, p.20430) and are exempt from tolerances.

[P.M. Note: Labeling instructions recommend applying maleic hydrazide 1 - 2 weeks after application of these fatty alcohols. A synergistic effect may be produced by the combination of these pesticides. Has anyone in PSO examined this possibility?]

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