FILE COPY

Date Out: EFB JUN 17 1981

TO: Product Manager 21
TS-767

From Dr. Willa Garner WL
Chief, Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 3125-320

Chemical: 1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl) butanone

Type Product: F

Product Name: Bayleton

Company Name: Mobay

Submission Purpose: Conditional use on pine seedlings

ZBB Code: 3(c)(7)

Date in: 10/27/80

Date Completed: JUN 17 1981

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

ACTION CODE: 315

EFB # 656

TAIS (level II 63 Days ~~10~~ 12

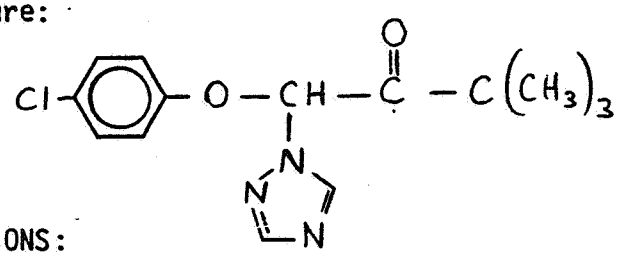
1.0 INTRODUCTION

This is a request for conditional registration of a use (to previously registered Bayleton 50% WP) to control pine rust on pine seedlings. The submitted document Acc. No. 243360 is dated 9-26-80.

1.1 Chemical name of Bayleton

1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanone

1.2 Structure:



2.0 DIRECTIONS:

The amendment to previously registered label for Bayleton 50% wettable powder fungicide is as follows:

ADD THE FOLLOWING

RECOMMENDED APPLICATIONS

Crop	DISEASE	Ounces BAYLETON 50% WP	REMARKS
Pine (seedlings)	Pine Rust (Fusiform rust)	4 to 16	Apply specified dosage per acre as a uniform spray with a minimum of 20 gallons of water per acre by ground and 5 gallons of water per acre by air. Begin application prior to infection period, repeat as necessary at 2 to 3 week intervals depending upon disease pressure. Use lower rates in areas of low disease incidence and higher rates in areas of severe disease incidence. A maximum of 4 applications of 16 ozs. BAYLETON 50% W.P. per acre may be made per season. A spreadersticker is needed to help adhere spray solution to the pine trees.

3.0 DISCUSSION OF DATA

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3.1 Leaching "Soil Thin-Layer Mobility of Twenty Four Pestidice Chemicals" by J.S. Thornton et al., 12/15/1976, No. 51016.

This study was previously reviewed. See the EFB evaluation dated August 8, 1978.

3.2 AEROBIC AND ANAEROBIC SOIL METABOLISM

Ref: The Aerobic and Anaerobic Soil Metabolism of Bayleton, R. R. Mango and R. J. Puhl. Report No. 51230 dated 1-12-1977.

Comments:

This report includes the aerobic and anaerobic soil metaboblism of Bayleton on silty clay loam soil under controlled laboratory conditions. The major metabolite is KWG - 0519 1-(4-chlorophenoxy) -3, 3-dimethyl-1-(1H-1,2,4 - triazol-1-yl)2-butanol. The behavior of Bayleton on sterilized soil, data on residues of Bayleton, and KWG-0519 residues in soil samles have been reported in this study.

This study has been previously reviewed and found acceptable. [See EFB Review of 8/8/1978 by Ron Ney].

3.3 SOIL ADSORPTION AND DESORPTION

Ref: Soil Adsorption and Desorption of Bayleton-Ring-UL-^{14}C by R. J. Puhl and J. B. Hurley. Revised October 19, 1978. Report No. 66501.

Precedure:

Kansas loam, Hagerstown silty clay and Florida sand were used for this study. Bayleton-fortified aqueous solution was added to samples of sieved and dried soil in cultured tubes and incubated at 25°C for 8 hours in a shaker bath. The test samples were then centrifuged and the supernatant of each monitored for ^{14}C-content.

The above adsorption procedure was carried out at 4 initial Bayleton solution concentrations of 0.44, 0.85, 4.28 and 8.61 ppm.

Using the same treated soils, desorption experiments were carried out by removing a 3 ml aliquot and replacing it with 3 ml of water a total of 3 or 4 times with incumbation and centrifugation. Desorption times were 16, 8, 16, 8 and 16 hours.

Analysis:

Aliquots of samples solutions from both adsorption and desorption experiments at various time intervals, were extracted with methylene chloride - acetonitrile (2:1) and the extracts were analysed by TLC. Radiometric analysis was conducted to quantify ^{14}C-content of test solutions, using LSC equipped with automatic external standardization.

Results:

The most commonly used relationship to described adsorption is the Freundlich equation, $x/m = KC^{1}/n$ [where x = ug chemical adsorbed, m = weight of adsorbent in grams, C = concentration (ug/ml) of the chemical in solution and K and n are constants]. Higher K values indicate greater adsorption. When values of 1/n are less than unity the relative adsorption decreases with increasing concentration .

Fruendlich constant values experimentally determined for the three soils are given in the following Table I.

Table I: Coefficient of Absorption of Bayleton - ^{14}C to Soil

Soil	K	1/n
Kansas Loam	9.31	0.703
Hagerstown Silty Clay	3.54	0.810
Florida Sand	5.91	0.902

The Characteristics of test soils are given as follows:

Kansas loam: sand % = 46, silt % = 36, clay % = 18, OM % = 3, pH = 5.5, CEC = 27.6 at pH 8.2

Hagerstown silty clay: sand % = 4, silt % = 53, clay % = 43, OM % = 2.1 CEC = 28.6 at pH 8.2

Florida sand: sand % = 92, silt % = 7, and clay % = 1, OM % = 3.7 pH = 6.9 and CEC at pH 8.2 = 26.6

The experimental desorption and adsorption values for the three test soils in this study are given in the following (Table II).

TABLE II

Adsorption of BAYLETON TO SOILS

Amount of BAYLETON Present (ug)

Soil	In Solution Initial	In Solution At Equil.	At equil. On Soil	% Adsorbed
Kansas Loam	4.4	0.9	3.4	77
	8.5	2.1	6.4	75
	42.8	17.5	25.3	59
	86.1	36.8	49.3	57
Hagerstown Silty Clay	4.4	2.3	2.1	48
	8.5	4.6	3.9	46
	42.8	27.5	15.3	36
	86.1	56.4	29.7	34
Florida Sand	4.4	1.8	2.6	59
	42.8	21.2	21.6	50
	86.1	41.3	44.8	52

TABLE III

Freundlich Constants Describing the Desorption of BAYLETON-^{14}C from Soil

Soil	Initial Conc. (ppm)	K	1/n
Kansas Loam	.44	12.74	0.833
	.85	10.96	0.770
	4.28	9.59	0.514
	8.61	12.71	0.451
Hagerstown Silty Clay	.44	2.96	0.645
	4.28	3.40	0.789
	8.61	4.66	0.649
Florida	.44	3.38	0.596
	4.28	6.05	0.907
	8.61	7.67	0.685

TABLE IV

Desorption of BAYELTON from Soil

Soil	Initial Concentration (ppm)	Amount Adsorbed (ug) after adsorption	Amount Adsorbed (ug) after five desorptions	% Desorbed
Kansas Loam	0.44	3.4	2.5	26
	0.85	6.4	4.6	28
	4.28	24.6	16.2	34
	8.61	49.3	30.5	38
Hagerstown Silty Clay	0.44	2.1	1.2	43
	4.28	14.5	6.2	57
	8.61	29.7	13.4	55
Florida Sand	0.44	2.6	1.2	42
	4.28	20.9	10.7	49
	8.61	44.8	22.7[a]	49

[a]Only four desorptions were done with this sample.

Triadimefon environmental fate review

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Pages _____ through _____ are not included in this copy.

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___ Description of product quality control procedures

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CONCLUSION:

Adsorption and desorption studies were made using three soils at four concentrations ranging from 0.44 to 8.61 ppm of Bayleton-ring-UL^{14}C. Adsorption data agree with the Freudlich equation. The degree of affinity for Bayleton in the soils showed the following order:

Kansas loan > Florida sand > Hagerstown silty clay
This is an acceptable study to delineate adsorption of the chemical on typical soils.

3.4 PERSISTENCE IN FIELD SOIL

Data and Discussion:

Ref: Tables of the results from soil persistence studies presented in Report Numbers: 51691, 51692, 52763, 52764, 52765, 52766, 52905 and 52906 contain previously submitted data. See the August 8, 1978 evaluation. Tables included in report Numbers: 68865, 68866, 68867, and 68868 contain new data on the same subject. All of these data in table form are included in the current submission.

The referenced tables include a large number of raw data on soil persistence studies conducted over an evaluation period of 1 to 3 years. Estimates of halflife values of Bayleton residues in soil at different geographical locations and the concentration of residues (Bayleton and metabolite KWG-0519) in 0-6" and 6-12" layer of soil are summarized in the following Summary Tables 1 and 2 Rainfall and temperature data were submitted.

Soil Characteristics

Study #	Texture	% Sand	% Silt	% Clay	%OM	pH	Toc	CEC
68865	Loamy sand	82	11	7	2.2	6.0	1.16	10.4
68866	Sandy loam	53	38	9	2.8	6.0	1.47	29.9
68867	Loamy sand	81	12	7	2.9	6.6	1.53	8.5
68868	Silty clay loam	12	59	29	5.3	5.3	2.79	52.8

*Note: In the August 8, 1978 evaluation, the field studies are described as ^{14}C labelled studies. This is in error as the studies used "cold" material. Refer to the August 8, 1978 evaluation, page 16-18, section 3.12.

Persistence of BAYLETON in Soil - Applied At 10 lbs./Acre, Not Incorporated[a]

SOIL TYPE	LOCATION	DAYS, FINAL APPLICATION TO SAMPLING	GROSS RESIDUE (PPM)[b] 0-6" Depth BAYLETON	0-6" Depth KWG 0519[c]	6-12" Depth BAYLETON	6-12" Depth KWG.0519	HALF-LIFE[d] (DAYS)	REPORT NO
Loamy Sand	Howe, IN.	0	3.49	0.96	0.49	0.18	280	68865
		30	0.07	2.29	<0.01	0.14		
		58	0.02	1.32	<0.01	0.02		
		119	0.03	1.38	<0.01	0.11		
		301	0.02	1.31	0.01	0.16		
		365	0.04	1.27	<0.01	0.11		
		553	0.06	0.57	0.02	0.11		
Sandy Loam	Portage La Prairie, Manitoba, Canada	0	5.78	0.73	1.94	0.08	180	68866
		31	5.13	2.79	1.50	0.70		
		66	1.96	2.52	15.9	0.04		
		274	0.50	2.32	0.34	2.19		
		365	0.39	1.17	0.17	0.24		
Loamy Sand	Tift County, GA.	0	3.90	2.48	0.89	0.58	40	68867
		30	0.13	0.07	0.06	0.72		
		61	0.02	0.17	0.37	3.48		
		121	0.03	0.27	0.01	0.21		
		270	0.02	<0.02	0.06	0.05		
		364	0.02	<0.02	0.02	0.04		
Silty Clay Loam	Stanley, KS.	0	0.34	1.21	0.26	0.41	305	68867
		30	0.04	1.56	0.02	0.35		
		60	0.05	1.38	0.02	0.42		
		122	0.07	1.19	0.04	0.40		
		270	0.04	0.82	0.03	0.07		

a) All plots were treated with a soil spray prepared from a 50% WP formulation at 160 oz. a.i. per acre. Assuming one acre of soil six inches deep weighs two million pounds, this rate is equivalent to a concentration of 5 ppm in the top six inch layer.

b) Residues are reported on a dry weight basis.

c) KWG 0519 is a soil metabolite and its residues are a result of BAYLETON application.

d) Half-life as determined from a least squares fit of the data on a semi-log plot (assuming first order decay).

Conclusions:

This new field data shows generally the same but slightly more rapid field dissipation of Bayleton during the first month than does the field data previously reviewed in our evaluation August 8, 1978. The older data show 1 - 17% parent compound remaining after 262 - 273 days in the 0 - 6 - inch soil segment. The new data show 0.5 - 12% remaining after 270 - 301 days in the 0 - 6 inch soil segment.

The new data do corroborate the old data by showing the halflife of Bayleton (parent compound) to be less than one month and most probably less than a week and the soil melabolite KWG 0519 to persist with a halflife of 9 - 12 months.

Residues were found to 12 inches in the soil. No evidence was submitted to show residues would not or did not leach further.

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3.5 PHOTODEGRADATION

PHOTOLYSIS ON SOIL

Ref: "Photodecomposition of Bayleton on a soil surface," by J. J. Obrist; Report No. 67047 dated 1/16/79, Acc No. 243360.

Procedure:

Samples of silty clay loam soil containing Bayleton - ring UL - ^{14}C were irradiated continually under artificial light sources (900 - 1100 uw/cm^2 output between 300 and 400 nm) using a combination of sun lamps and black light, at 25°C and 55% humidity in an environmentally controlled chamber. The soil fortification rate was equivelent to 4 oz ai/A. The test chamber was connected to a series of scrubbers in the following order: ethylene glycol, 10% H_2SO_4 and 10% NaOH. A constant flow of air (100 ml/min) was maintained across the petri dishes. At 0, 7, 14, 21, 28 and 35 days the irradiated soil samples were assayed for radioactivity. The test soils were extracted with methanol - water (7:3), followed by acetone, concentrated and analyzed by TLC and LSC. Samples of extracted and unextracted soils were combusted for radio analysis. The activity in the NaOH and ethylene glycol traps from the 35 day soil sample was extracted and analyzed by LSC and radio - TLC techniques.

Soil characteristics were as follows:
Class - silty clay loam, % sand = 0, % silt = 66, % clay = 34, % OM = 2.4, pH = 5.9, CEC = 32, and denisty = 2.6 gm/cc.

TABLE I

Percent Activity Distribution[a] of Bayleton-ring-UL-^{14}C
Applied to the Surface of a Silty Clay Loam Soil
Irradiated Continuously Under Simulated sunlight for 35 days

	Under Irradiation						In the Dark					
	% Activity Distribution						% Activity Distribution					
Interval, Days	0	7	14	21	28	35	0	7	14	21	28	35
BAYLETON	98	85	75	76	77	78	98	88	92	85	83	85
p-chlorophenol	-	1	4	5	5	6	-	1	1	3	5	6
Diffuse Activity[b]	-	1	1	1	1	2	-	-	-	-	TR[e]	1
Origin Material	2	2	1	1	2	3	2	3	1	1	1	3
Total Organosoluble[c]	100	89	81	83	85	89	100	92	94	89	89	95
Ethylene Glycol Trap	-	1	2	3	3	3	-	1	1	1	2	2
Sodium Hydroxide Trap	-	1	1	2	2	2	-	-	-	TR	TR	1
"Bound Activity"[d]	-	3	3	4	4	4	-	2	3	3	3	3
TOTALS	100	94	87	92	94	98	100	95	98	93	94	101

[a]Based on theoretical applied activity, $1,340 \times 10^6$ dpm per soil petri dish, by TLC analysis.
[b]Activity spread along the plate, not any defined R_f.
[c]Average activity in methamol extract of duplicate soil samples.

[d]Activity remaining on the soil solids after extraction, determined by combustion analysis.

[e]TR = trace

Conclusion:

Bayleton on soil under continuous irradiation with high intensity artificial light for 35 days, is found to be relatively stable. After 35 days, the control samples held in dark resulted in 85% unaltered Bayleton, where as under irradiation about 80% intact radioactive chemical remained in the soil.

In both these systems, 6% conversion to p-chlorophenol occurred which would indicate that photolysis is not responsible for this degradation. On an over all basis, the chemical is relatively stable to photolysis on soil and photolysis plays a neglgible role in the overall degradation of Bayleton on soil.

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3.6 PHYSICO-CHEMICAL PROPERITIES

Ref: "Bayleton water solubility and octanol/water partition coefficient" by W. M. Leimkuehler Report No.68477 Acc. No. 243360.

Solubiity:

Solubility in distilled water at 20° has been determined to be 60 ppm.

Octanol/water partition coefficient

Using an octanol/water ratio of 1:20, octanol/water partition coefficient (average) has been determined to be 972 at 20° ± 1°C.

3.7 ACTIVATED SLUDGE

Ref: "A Laboratory Study of the Effects of Bayleton on Activated Sludge" by Po-Yung and Jason Caplan. Mobay Agri Chem Report March 5, 1979, Tab 67387 Acc. No. 243360 (August 19, 1980).

Procdeure:

A standard activated sludge study was run with an increasing concentration of Bayleton starting from 0.1 ppm to 100 ppm added over 10 days.

Resúlts:

The schedule of ^{14}C-Bayleton addition every 23 hours (cycle) is given as follows:

Cycle	^{14}C- Bayleton concentration in sludge system ppm	Added amount of ^{14}C-Bayleton (mg)
1	0.1	0.21
2	0.5	1.05
3	1.0	2.10
4	5.0	10.5
5	10.0	21.0
6	20.0	42.0
7	40.0	84.0
8	60.0	126.0
9	80.0	168.0
10	100.0	210.0
11 to 13	0.0	0.0

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Typical data on physical parameters and plate counts for treated sludge in Run #1

Cycle	Pesticide added ppm	pH	D.O.	Suspended solids (mg/l)	Plate Counts[a] A	B	C
0	0.0	7.88	6.7	1,284	$9.7\ (10^6)$	$3.3\ (10^6)$	$1.0\ (10^5)$
1	0.1	7.94	7.2	1,487	$6.3\ (10^6)$	$2.35\ (10^6)$	$3.6\ (10^5)$
3	1.0	7.91	7.0	1,552	$1.6\ (10^6)$	$1.07\ (10^6)$	$1.2\ (10^5)$
5	10.0	7.87	6.1	1,822	$4.8\ (10^6)$	$4.1\ (10^5)$	$1.9\ (10^4)$
8	60.0	7.49	1.5*	1,952	$3.6\ (10^6)$	$5.3\ (10^5)$	$8.4\ (10^3)$
10	100.0	7.70	5.8	1,984	$9.6\ (10^6)$	$1.2\ (10^6)$	$7.9\ (10^4)$
11	0	7.76	6.4	1,947	$1.5\ (10^7)$	$1.1\ (10^7)$	$1.2\ (10^5)$
12	0	7.67	5.6	2,141	$1.8\ (10^7)$	$2.8\ (10^6)$	$8.5\ (10^4)$

*Line froze decreasing aeration

a A = nutrient agar, B - Actinomycete Isolation Agar, C - Yeast medium.

The radio carbon analysis for the same run (#1) is given as follows:

Cycle	Pesticide added ppm	% recovery of radio carbon Supernate	Solids	Volatiles	CO_2	Total
1	0.1	82.6	16.3	0.5	1.7	101.1
3	1.0	90.4	14.6	<0.1	0.2	105.2
5	10.0	91.5	10.6	<0.1	<0.1	102.1
8	60.0	80.2	18.0	<0.1	<0.1	98.2
10	100.0	62.4	36.0	<0.1	<0.1	98.4

The TLC data for Bayleton and metabolites, in cycle 10 sample, were found to be the following:

Sample	% Radio carbon recovery in TLC (cycle 10)			
Supernate	^{14}C-Bayleton	Bay KWG 0519 Form I	Bay KWG 0519 Form II	Total
Run 1	84.7	4.2	8.5	98.1
Run 2	85.7	4.9	7.5	102.9
Run 3	84.0	5.2	8.6	91.0
Average	84.8	4.8	8.2	97.3

Solids:

Run 1	89.7	3.5	4.7	106.0
Run 2	90.0	4.6	2.7	90.7
Run 3	85.7	3.8	6.9	96.1
Average	88.5	4.0	4.8	97.6

Conclusion:

Under the experimental conditions, ^{14}C-Bayleton exhibits no adverse effects on the activated sludge microbial population as measured by different culture media up to a concentration of 100 ppm.

At concentrations less then 60 ppm, greater than 80% of the Bayleton residues will be in the supernatant and 10 - 2% will be associated the solids. (Less than 2% of the ring labelled Bayleton was released as volatiles).

Parent Bayleton will represent 85 - 89% of the residues extracted from the supernate and solids, with 9 - 13% of the extracted residues represented as Bay KWG 0519 Form I and Form II. Structures of these 2 metabolites were not given and are needed.

3.8 EFFECT OF MICROBES ON PESTICIDE

Ref: "Identification of Micro Organisms in Samples of Kansas Loam Soil" by L. Smedly and Douglas I. Hapler, Mobay Agrichem Report dated May 1, 1979, Tab 67814, Acc. No. 24336, August 19, 1980.

This study was conducted to isolate and identify the soil microorganisms present in the Kansas soil. Normal distributions of families were found.

Ref: "The Effect of Soil Microorganisms on the Degradation of Bayleton" by R.J. Puhl, J.B. Burley and J.S. Thornton. July 2, 1979, TAB 68009.

Procedure:

Bayleton-triazol-3,5-^{14}C was applied to sterile and non-sterile soil at 1 ppm concentration and aerobically incubated at room temperature, without any provision to trap volatile ^{14}C materials. The soil moisture content was brought to 14%.

A single non-sterile soil was extracted with methanol at zero-time, while one sterlized and one non-sterlized sample was extracted at 7 and 35 days. The methanol extract was then evaporated to an aqueous phase which was partitioned with dichloromethane: acetonitrile. Aqueous and organic layers were analyzed by TLC and the extracted soil was combusted.

Results:

The loamy soil used in this study has the following characteristics:

% Sand = 48, % Silt = 35, % Clay = 17, % OM = 3.5, pH = 5.5, CEC(meq/100g at 8.2 pH) = 24.5 and PD = 2.6-2.75 g/cc.

In sterile soil following aerobic incubation for 35 days, Bayleton-triazol-3, 5-^{14}C was essentially unchanged, while in the non-sterile soil the following results were obtained.

Time (days)	Bayleton	Baytan II*	Baytan I*
0	99.1	0	0
7	86.1	5.6	1.8
35	55.9	24.6	8.4

*exist as diastereoisomers

Conclusion:

In the non-sterile soil, under aerobic conditions, Bayleton is microbially degraded.

The soil utilized in this study is referenced to show that normal distributions of families of microbes were present. Based on the metabolism data, it is concluded that soil microorganisms play a major role in the degradation of BAYLETON on soil.

The halflife in this study was found to be 5-6 weeks. Soil data previously reviewed (see the Aug. 8, 1978 review) show shorter halflives on different soils, i.e., 6 days on a silty clay loam (lab study) and 18 days on a sandy loam (outdoor study).

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3.9 EFFECT OF PESTICIDE ON MICROBES

Ref: "Uptake of the Systemic Fungicide Triadimefon by Clover and its Effect on Symbiotic Nitrogen Fixation" by David J. Fisher, et al, Pestic Sci. 1979, 10, 75-82. Tab 68260.

Procedure

This study monitored the effect of triadimefon on symbiotic nitrogen fixation of clover and R. Trifolii. The effect on free - living nitrogen - fixing soil microbes was not studied. The soil and clover plants were analyzed for parent compound and the metabolite triadimenol.

Soil treatment rates ranged from 0.5 to 50 ppm.

Results:

1) R. Trifolii, grown in agar containing triadimefon at 50 ppm, was not affected by the pesticide.

2) Oxygen uptake by R. Trifolii in liquid culture was not affected at 50 mg per liter but was 15% inhibited at 1000 mg per liter.

3) Clover plants were stunted when grown in soil containing triadimefon with the efect lasting longer as the soil concentration of pesticide increased to 50 ppm. After 6 months of growth, effects were no longer apparent.

4) The data report a significant decrease in the rate of nitrogen fixation by clover plants grown in soil containing triadimefon at 10 and 50 ppm.

5) The soil halflife of triadimefon was about 12 weeks at initial soil concentrations of 0.5 - 50 ppm. The data state that residues of metabolites were "virtually undetectable."

6) Residues in 12 week old clover roots contained triadimenol and triadimefon in an approximate ratio of 5:1. The concentration of total residues in the plant after 12 weeks growth exceeded the initial soil concentration by a factor of about 5. The residues in the leaves consisted of both triadimenol and triadimefon in an approximate ratio of 10:1 to 100:1. Total residues in the leaves did not exceed the initial soil levels but were not less than 10% of that initial soil concentration.

CONCLUSION:

According to the April 22, 1981 draft of Subpart N, a study on effects of triadimefon on microbes is not needed at this time. However, since this study was not conducted with free - living nitrogen fixing soil microbes it would not satisfy the requirement.

4.0 CONCLUSION

4.1 Leaching

Bayleton has a low leaching potential. See the EFB review dated August 8, 1978, section 3.10.

4.2 Aerobic and Anerobic Soil Metabolism

Report No. 51930 of this submission has been previously reviewed and the environmental fate of Bayleton in soil under aerobic and anaerobic soil conditions is known. See the August 8, 1978 review, section 3.8.

This study is acceptable for the intended use of the chemical.

4.3 Adsorption and Desorption

Report No. 66501 has provided data on adsorption and desorption of Bayleton in three soil types. The Freundlich constants for adsorption in test soils range between 3.54 to 9.31. The % desorption varies between 26 to 57% for the same soils. This data supports the leaching data which shows a low leaching potential.

This study is acceptable for all uses of the chemical.

4.4 Persistance in Soil

The new field data support the previously reviewed data by showing the halflife of Bayleton to be less than one month (and most probably less than a week) and the soil metabolite KWG 0519 to persist with a halflife of 9-12 months.

Residues were found to 12 inches in the soil. No evidence was submitted to show residues would not or did not leach further.

4.5 Photo-Degradation in Soil

Bayleton will be stable to photolysis on soil surfaces. The photolysis data requirment on soil and in water has been satisfied.

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4.6 Physico-Chemical Properities

Solubility in water and octanol/water partition coefficient studies have been provided. Report No 68477 shows the water solubility for Bayleton to be 60 ppm at 20°C. The octanol/water partition coefficient K at 20°C is 972.

4.7 Activated Sludge

No adverse effects were seen on the microbial populations at concentrations up to 100 ppm. About 80% of the Bayleton residues will be in the supernate and 10 - 20% will be associated with the solids. Residues extracted from the supernate and solids are 85 - 89% parent and 9 - 13% Bay KWG 0519 Form I and Form II. Structures of these 2 metabolites are needed.

4.8 Bayleton is microbially degraded in soil. Halflives in soil are 1 - 6 weeks.

4.9 Considering the data reviewed in the August 8, 1978 review and the new data evaluated herein, the following data requirements have been satisfactorily met:

hydrolysis
photolysis in water
photolysis on soil
aerobic soil metabolism
anaerobic soil metabolism
leaching
aged leaching
field dissipation
fish accumulation

5.0 RECOMMENDATIONS

5.1 We concur with the use of Bayleton on pine seedlings under 3(c)(7) as requested.

5.2 The data were not reviewed to consider use of Bayleton for forest or preforestation uses. It is assumed that treated areas will not be used for growing food or feed.

5.3 We request structures of the metabolites Bay KWG 0519 Form I and Form II.

Samuel M Creeger June 17, 1981

Samuel M Creeger
June 15, 1981
Section # 1/EFB
Hazard Evaluation Division

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