

FILE COPY

Date Out EFB:

MAR 29 1982

MAR 29 1982

To: Chief,  
Toxicology Branch  
Hazard Evaluation Division (TS-769)

*Heckert J. Manning, for*

From: Willa Garner, Ph.D.,  
Head, Review Section No. 1  
Environmental Fate Branch  
Hazard Evaluation Division (TS-769)

Attached please find the EEC information requested for:

Chemical: Baygon

Product Name: not specified

Use Pattern for EEC Calculations: Alfalfa and Pasture Grass - Potential  
for reaching groundwater

Date In: 3/8/82

Date Out: 3/29/82

EEC/EFB#: 3

## 1.0 INTRODUCTION

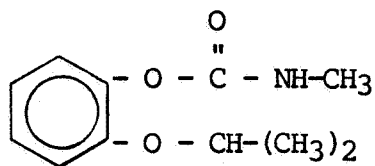
In its review of Baygon on 12/31/81, EFB deferred to Toxicology Branch as follows:

"7.3 Due to the demonstrated high mobility of Baygon, we defer to Toxicology Branch on the issue of possible human exposure which may result from contamination of ground water or surface water drinking supplies by Baygon and its major metabolites (des-methyl Baygon and O-isopropoxy phenol) due to movement of these compounds through soil profiles."

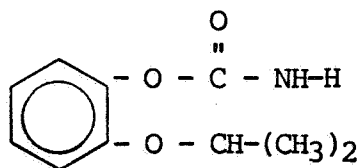
On January 25, 1982, Toxicology Branch (W. Dykstra) requested "that EFB determine the level of Baygon and its major metabolites in groundwater or surface water drinking supplies as a result of adding alfalfa and pasture grass to the label."

## 2.0 STRUCTURE

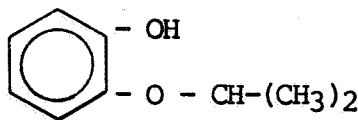
Baygon: O-Isopropoxyphenyl-N-methylcarbamate



Desmethyl Baygon:



Isopropoxyphenol:



## 3.0 DIRECTIONS FOR USE

Alfalfa and Pasture grass uses were proposed for Reg. #3125-GNA and 3125-146. Facsimile labels are appended to this review.

#### 4.0 PESTAN MODEL - INPUT PARAMETERS

The proposed label revision was limited to irrigated crops in California. Application of Baygon MOS insecticide would be at rates of up to 0.175 lb ai/A (.195 kg ai/Ha), and up to 10 consecutive applications per season at 7 to 14 day intervals during the growing season. Thus the total amount of Baygon which might be applied during any one growing season could be as much as 1.95 kg ai/Ha.

Physical and chemical parameters were taken from the various studies reviewed on 12/31/81 (copy previously sent to Tbx), or from Enfield (1).

Rainfall + Irrigation :  $42'' + 8'' = \underline{50''/\text{year}}$

Evapotranspiration : (Pan evap.) x (Crop Coeff) x (Pan Coeff)  
 $70'' \times 0.87 \times .7 = \underline{42.63''/\text{year}}$

Recharge :  $50 - 42.63 = \underline{7.37''/\text{year}}$

Soil Characteristics : Fresno Sandy Loam, pH = 7.7, OM = 1.4%

Water Solubility . . . . .	1750 ppm	$\overline{\text{K}}$
Estimated Recharge Rate . . . . .	0.00214 - 0.00642 cm/hr**	
Sorption Constant ( $k_d$ ) . . . . .	.62(exptl), 0.3(calc'd)	$\leftarrow$
Degradation Rate Coefficient . . . . .	.00016/hr ( $t_{0.5} = 180$ days)	
Bulk Density . . . . .	1.43 gm/cc	
Soil Porosity . . . . .	435 cm <sup>3</sup> /cm <sup>3</sup>	
Characteristic Curve Coefficient . . . . .	4.9	
Dispersion Coefficient . . . . .	06 cm <sup>2</sup> /hr	
Minimum Depth . . . . .	0 cm	
Maximum Depth . . . . .	320 cm	
Minimum Projected Time . . . . .	0 days	
Maximum Projected Time . . . . .	1500 days	
Number of Applications . . . . .	10	
Application Rate . . . . .	0.196 kg a.i./Ha	
Days Before Beginning of Recharge . . . . .	7	

---

(1) Enfield, Carl G. et al. Approximating Pollutant Transport to Groundwater (Undated)

## 5.0 DISCUSSION

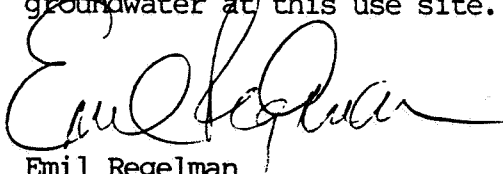
The outputs of the PESTAN leaching model are appended to this review. Specifically, the model was run twice. On the first run, the recharge rate and  $K_d$  were assumed to be the average estimated/measured values of 0.00214 cm/hr and 0.62, respectively. On the second run, conditions favoring mobility were emphasised by assuming higher rainfall (recharge at three times the average value) and lower soil adsorption ( $K_d = 0.3$ ).

## 6.0 RESULTS

Despite the emphasised rainfall and reduced soil adsorptivity, parent Baygon did not move into soil profiles greater than about 300 cm at concentrations greater than .01 ppb, and then only after about 3+ years. Considering the fact that parent Baygon has been classified as a mobile pesticide, it seems reasonable to assume that similar movement of its various degradates, though not subjected to Pestan modelling, would not be likely to move significantly faster or deeper than the parent compound.

## 7.0 CONCLUSIONS

Under the conditions of proposed use (California, 0.195 kg ai/Ha maximum/season), it seems unlikely that Baygon would contaminate groundwater at this use site.



Emil Regelman  
Chemist  
EFB/HED TS-769C  
March 29, 1982

BAYGON / ALFALFA AND PASTURE GRASS / CALIFORNIA

Model: PESTAN

Date: MARCH 29, 1982

Solubility = 1750 ppm

Recharge Rate = .00214 cm/hr

Sorption Constant = .62

Degr. Rate Coeff. = .00016 /hr

Bulk Density = 1.43 gms/cc

Soil Porosity = .435 cc/hr

Char. Curve Coeff. = 4.9

Dispersion Coeff. = .06 cm<sup>2</sup>/hr

Proj. Water Content = 0.27

Pore Water Velocity = .008cm/hr

Pollutant Velocity = .002cm/hr

Length of Slug = .010cm

Equivalent to 1.95729 kg a.i./Ha

SOLUTION CONCENTRATIONS in PPM [ppB]

At Day...	0	150	300	450	600	750	900	1050	1200	1350	1500
0 cm	9.55	0.26	.074	.024	[8.0]	[2.8]	[1.0]	[.37]	[.14]	[.050]	[.019]
16 cm		0.21	0.11	.045	.017	[6.3]	[2.4]	[.89]	[.33]	[.13]	[.048]
32 cm		.014	.048	.036	.019	[8.5]	[3.6]	[1.5]	[.60]	[.24]	[.094]
48 cm		[.077]	[5.8]	.012	.011	[6.9]	[3.6]	[1.7]	[.78]	[.34]	[.14]
64 cm			[.19]	[1.9]	[3.4]	[3.4]	[2.4]	[1.4]	[.74]	[.36]	[.17]
80 cm			[.013]	[.12]	[.57]	[.98]	[1.0]	[.79]	[.51]	[.29]	[.16]
96 cm					[.048]	[.17]	[.28]	[.31]	[.26]	[.18]	[.11]
112 cm						[.018]	[.052]	[.084]	[.094]	[.083]	[.062]
128 cm								[.016]	[.025]	[.029]	[.026]
144 cm											
160 cm											
176 cm											
192 cm											
208 cm											
224 cm											
240 cm											
256 cm											
272 cm											
288 cm											
304 cm											
320 cm											

| = VALUES LESS THAN OR EQUAL TO 0.01 ppB

BAYGON / ALFALFA AND PASTURE GRASS / CALIFORNIA

Model: PESTAN

Date: MARCH 29, 1982

Solubility = 1750 ppm

Recharge Rate = .00642 cm/hr

Sorption Constant = .3

Degr. Rate Coeff. = .00016 /hr

Bulk Density = 1.43 gms/cc

Soil Porosity = .435 cc/hr

Char. Curve Coeff. = 4.9

Dispersion Coeff. = .06 cm<sup>2</sup>/hr

Proj. Water Content = 0.29

Pore Water Velocity = .022cm/hr

Pollutant Velocity = .009cm/hr

Length of Slug = .015cm

Equivalent to 1.95566 kg a.i./Ha

SOLUTION CONCENTRATIONS in PPM [ppB]

At Day...	0	150	300	450	600	750	900	1050	1200	1350	1500
0 cm	15.28	.014	[.17]								
16 cm		0.13	[2.2]	[.036]							
32 cm		0.26	.014	[.32]							
48 cm		0.13	.041	[1.7]	[.044]						
64 cm		.014	.059	[5.8]	[.23]						
80 cm		[.37]	.041	.012	[.82]	[.032]					
96 cm			.014	.015	[2.1]	[.12]					
112 cm			[2.2]	.012	[3.5]	[.33]	[.017]				
128 cm			[.18]	[5.8]	[4.3]	[.68]	[.051]				
144 cm				[1.7]	[3.5]	[1.1]	[.12]				
160 cm				[.31]	[2.1]	[1.2]	[.22]	[.020]			
176 cm				[.034]	[.82]	[1.1]	[.31]	[.041]			
192 cm					[.23]	[.68]	[.35]	[.069]			
208 cm					[.045]	[.33]	[.31]	[.095]	[.014]		
224 cm						[.12]	[.22]	[.11]	[.022]		
240 cm						[.032]	[.12]	[.095]	[.029]		
256 cm							[.051]	[.069]	[.031]		
272 cm							[.017]	[.041]	[.029]		
288 cm								[.020]	[.022]		
304 cm									[.014]		
320 cm											

| = VALUES LESS THAN OR EQUAL TO 0.01 ppB

Propoxur environmental fate review

---

---

Page \_\_\_\_\_ is not included in this copy.

Pages 7 through 11 are not included in this copy.

---

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients
  - ☐ Identity of product impurities
  - ☐ Description of the product manufacturing process
  - ☐ Description of product quality control procedures
  - ☐ Identity of the source of product ingredients
  - ☐ Sales or other commercial/financial information
  - ☒ A draft product label
  - ☐ The product confidential statement of formula
  - ☐ Information about a pending registration action
  - ☐ FIFRA registration data
  - ☐ The document is a duplicate of page(s) \_\_\_\_\_
  - ☐ The document is not responsive to the request
- 

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

---