

US EPA ARCHIVE DOCUMENT

058001

Date Out EAB:

DEC 06 1985

To: J. Ellenberger
Product Manager 25
Registration Division (TS-767)

From: Samuel M. Creeger, Chief *SAC*
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached please find the environmental fate review of:

Reg./File No.: 3125-108

Chemical: Azinphos Methyl

Type Product: Insecticide

Product Name: Guthion

Company Name: Mobay

Submission Purpose: Submission in Response to GWDCI.

ACTION CODE: 495

Date In: 05/23/85

EAB # 5626

Date Completed: DEC 06 1985

TAIS (level II) Days

1.0

Deferrals To:

 Ecological Effects Branch

 Residue Chemistry Branch

 Toxicology Branch

Monitoring study requested by EAB:

Monitoring study voluntarily conducted by registrant:

All studies required under the GWDCI have been submitted and screened. Based on the results of the screen, EAB concludes that Guthion has little potential to reach ground water when used agriculturally.

Although the studies were only screened and not subjected to in-depth review, it is concluded that the studies are of sufficient quality to allow a screening assessment of Guthion's leaching potential. Any problems or deficiencies with the studies not caught in the screening process are not of such significance as to affect the results of the study(ies). The environmental fate data screened here will be reviewed in detail when Guthion comes up for review under the Registration Standards Program.

The chart below compares the data from environmental fate studies for Guthion to environmental fate parameters believed to be characteristic of leaching pesticides (Cohen, et al., 1984).

	Guthion	Triggers
Hydrolysis	<p>pH °C t_{1/2}</p> <p>4 30 39 hours</p> <p>7 30 23 hours</p> <p>9 30 2.2 hours</p> <p><i>? pH units?</i></p>	Half-life greater than 25 weeks.
Aqueous Photolysis	4 30 9.4 hours	Half-life greater than 1 week.
Soil Photolysis	On a sandy loam soil with 1.4% OM, t _{1/2} = 9 days.	
Aerobic Soil Metabolism	<p>In a sandy loam soil with 1.4% OM, t_{1/2} = 44 days.</p> <p>Each breakdown product accumulates to < 6% of the initial ¹⁴C at 365 days. 72% of initial ¹⁴C is soil bound-not extractable at 365 days. 95% degradation of parent by 180 days. No volatile losses. Metabolites are not water-soluble. No persistence of residues.</p>	Soil half-life greater than about 2-3 weeks.

Guthion

Triggers

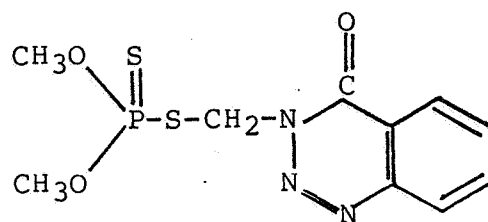
Anaerobic	In the same sandy loam soil, $t_{1/2}$ = 68 days after, but not including, a 30-day aerobic incubation period. (50% of initial ^{14}C not-extractable at 90-days, < 1% residues found in water used to flood soil). At day 90, 23% present as parent. No persistence of residues.	
Mobility/ Leaching	<u>Soil TLC</u> <u>Rf</u>	<u>Kd</u>
<u>Soils</u>		Kd less than 5, and usually less than 1 or 2.
sand	.18	
SL	.22	7.60
SCL	.11	
SiL	.18	16.75
SiC	.14	
SiC	.24	9.85
Field Dissipation	In 4 studies, representing four different soil types, Guthion exhibited 4 different half-lives. All soils sampled to 12". All studies run as duplicate field plots. Rapid dissipation of residues. Florida results (sand soil) may be questionable because of high rainfall, 80"/yr.	
<u>Soils</u>	<u>$t_{1/2}$</u>	
SL	†*30 days	✓
SL	† 61 days	
SCL	181 days	
sand	*120 days	
	* No movement of residues below 6" in soil.	
	† Duplicate analyses confirm one another.	

Guthion

Triggers

Product
ChemistryKoc = 900 ✓
Solubility = 27 ppmKoc less than 300-500
Solubility greater than 30
ppm

Chemical Structure:



Catherine Eiden
Catherine Eiden
Chemist, Section #1
EAB