

US EPA ARCHIVE DOCUMENT

Evaluation of data for Guthion in response  
to PR Notice 70-15  
Submitted by Chemagro Corporation  
Letter of February 25, 1971

I. Introduction

1. This is the first response for 70-15 for Guthion.

II. Discussion of Data

1. Analytical Method is modified residue method. Instrument used is Beckman GC-4, with metal thermionic detector.

2. Runoff.

(a) 3 lanes 15, 20 and 30 feet long slaped at about 1 inch 1 foot water was collected at end of lanes.

(b) Guthion SC was applied at a rate of 20 lbs. A/A (0.5 lbs. A/gall.

(c) Plots were protected from natural rainfall.

(d) Highest runoff was on sandy loam, and lowest was on high organic silt loam. Intermediate on silt loam. At the end of 37 days the following data are listed:

Soil Type	Movement 5 ft.		10 ft.		20 ft.	
	gal. H <sub>2</sub> O	% moved	gal. %	gal. %	gal. %	gal. %
Sandy Loam	4.5	ND	6.5	ND	5	ND
Silt Loam	6	0.05	7	0.04	5	0.04
High Organic Silt Loam	4	0.01	7	0.03	4.5	ND

It should be noted that at 2, 7, 16 and 23 day movement may be noticed especially in sandy loam. It is possible that at the end of the 37 days testing Guthion degraded to products that could not be determined water analysis was not submitted from run-off at end of lanes. We must have.

3. Leaching.

(a) Soil colmuns - 45 cm long, 1.6 cm diameter, 15 gms of soil were mixed with celite filter - aid and placed in columns. Columns were weighed dry and wet.

(b) 10 ppm of technical Guthions was applied to top of soil and topped with sand.

(c) Data was not submitted on soil or on watered eluted through column.

(d) Chemagro states the following:

Soil	Inches of rainfall required to leach Guthion 1 foot
Sandy Loam	62
Silt Loam	195
High Organic Silt Loam	186

#### 4. Adsorption

(a) Technical Guthion was made up as 2.67, 3.55 and 4.44  $\mu\text{g/ml}$ . 5 ml of each were equilibrated with 1 gm of soil for 2 hours by shaking. The water was drawn off and analyzed. What was left on the soil was calculated. The adsorption coefficient ( $K_d$ ) is given as follows:

Soil	$K_d$ (ml/gm)
Sandy Loam	3.33
Silt Loam	11.04
High Organic Silt Loam	28.50

(b) Data on how much stayed in water phase or could be extracted was not submitted. We must have data.

#### 5. Water stability

(a) The following was submitted:

System	PH	1/2 life in days	
		30°C	50°C
Phosphate buffers in capped amber bottles held indoors in const. temp. water baths. Technical Guthion was used.	5	17.3	1.8
	7	10.0	1.3
	9	0.5	0.08
	PH	29°0	
Washing pool, filled with 2 inches silt and 10 inches of water. Held outside	7	1.2	

## 6. Soil Persistence

(a) Data previously submitted indicated the following:

Soil Type	1/2 Life
Muck Sand	32 days
Clay	100 days
Silt Loam	84 days

### III. Conclusion

#### 1. Runoff Data

We need to know the ppm added and the ppm found in soil at times stated. We need analysis of the runoff water.

#### 2. Leaching Data

We need to know the ppm added and the ppm at different levels. We need analysis of water eluted through the columns and how much water was used.

3. On 70-15 we need good reliable data on all points, not the good data submitted. We need recovery data indicating that the analytical method determines parent compound and degradation products.

#### 4. Adsorption Study

We need to know the ppm added, found in water, through the amount that could be extracted from the soil and the amount remaining on the soil.