

PATENT SPECIFICATION

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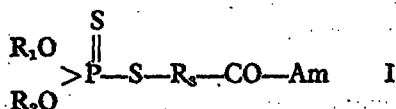
NO DRAWINGS

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(54) DITHIOPHOSPHATES, THEIR MANUFACTURE AND
USE IN PEST CONTROL AGENTS

5 (71) We, CIBA-GEIGY AG., (formerly known as CIBA Limited), a body corporate organised according to the laws of Switzerland, of Basle, Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention provides dithiophosphates of the general formula I



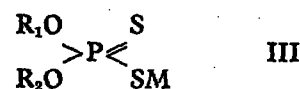
15 wherein (i) R_1 and R_2 , which may be the same or different, each represents an alkyl radical having up to 5 carbon atoms, an allyl radical, a 2-methoxyethyl radical or a 2-ethoxy-ethyl radical; R_3 represents a methylene radical or an ethylidene radical; and Am represents one of the following cyclic amines, which is attached to the carbonyl group *via* its nitrogen atom: 2-methylpiperidine, 3-methylpiperidine, 4-methylpiperidine, 2,6-dimethylpiperidine, 3,4-dibromopiperidine, 1,2,5,6-tetrahydropyridine, octahydroazocine; or wherein (ii) R_1 and R_2 , which may be the same or different, each represents a butyl, allyl or 2-methoxyethyl radical; R_3 represents a methylene radical; and Am represents a hexamethyleneimine radical which is attached to the carbonyl group *via* its nitrogen atom; or wherein (iii) R_1 and R_2 , which may be the same or different, each represents an ethyl or *n*-propyl radical; R_3 represents an ethylidene radical; and Am represents a hexamethyleneimine radical attached to the carbonyl group *via* its nitrogen atom.

35 The compounds of the general formula I may be prepared in a simple manner by reacting an α -halogenocarboxylic acid amide of the general formula II



[Price 25p]

with a dithiophosphate salt of the general formula III



in a solvent. In these formulae, R_1 , R_2 , R_3 and Am have the meanings given above, Hal represents a halogen, especially chlorine, atom and M represents an alkali metal, especially sodium or potassium, atom or an ammonium radical. Accordingly, the acid forming the basis for the halogenocarboxylic acid amide of the general formula II is preferably chloroacetic acid or α -chloropropionic acid. The solvents which may be used are water or preferably an organic solvent, for example an aliphatic alcohol or an aliphatic ketone each having up to 4 carbon atoms in the aliphatic chain. The reaction temperature may vary between room temperature and the boiling temperature of the solvent. Depending on the nature of the reaction participants the addition of an alkali metal halide, for example sodium or potassium iodide, as catalyst may be of advantage.

Alternatively, for example an ester of an appropriate O,O-diorganodithiophosphoryl acetic or α -propionic acid, for example the phenyl, benzyl or ethyleneglycol ester of such an acid may be reacted with the appropriate heterocycle. It is also possible to react (a) a mixed anhydride of such a phosphoryl-acetic or α -propionic acid, for example the anhydride with benzoic acid or with a carbonic acid semiesther, with (b) an appropriate heterocycle. Alternatively, a salt, preferably an alkali metal salt, of such a phosphoryl-acetic or α -propionic acid may be reacted with a carboxylic acid chloride of an appropriate N-heterocycle and CO_2 eliminated at an elevated temperature.

The compounds of the general formula I as such or in combination with one or more suitable additives can be used as pest control agents. Suitable additives are, for example solvents, diluents, dispersants, emulsifiers,

thickening agents, adhesives and/or fertilizers, as well as other pest control agents, for example insecticides, acaricides, herbicides or fungicides.

- 5 An especially good action was observed in herbicidal and fungicidal application. Compounds derived from α -halogenpropionic acid amides (i.e. R_3 represents an ethylidene radical) exhibit in particular fungicidal properties, whereas compounds derived from halogenacetic acid amides are preferably used as herbicides. Of the latter compounds, those containing in the amide portion the hexamethyleneimine radical or a mono- or dimethylated piperidine radical have a particularly good effect. Depending on the quantity used, a total or selective herbicidal effect is produced. Selectivity is observed especially in the pre-emergence method
- 10 against broad-leaved weeds in cotton, soya, maize, wheat, rice and other crop cultures. This finding is surprising because many known, similarly constituted compounds (cf. for example German Patent Specification No. 819,998, where the unsubstituted amide, the anilide, the hydroxymethylamide, the butylamide of O,O-dialkyldithiophosphoryl-acetic or -propionic acids are described) have practically no herbicidal effect but are active
- 15 against insects and mites, for example against *Aphis fabae*, *Myzus persicae* Sulz., *Macrosiphum pisi*, *Macrosiphoniella sanborni* Gill., *Trips haemorrhoidalis*, *Aonidiella aurantii*, *Padnonychus citri*, *Tetranychus urticae*, *Tenebrio molitor* L., *Porcellio scaber*, *Phyllodromia germanica*, *Blatta orientalis*, *Periplaneta americana*, *Periplaneta australasiae*, larvae of *Leucania unipuncta* (army worm), which occur in the south of USA.

- 20 The compositions which contain an active substance of the general formula I can be applied in a great variety of forms, for example in the form of emulsions, dusting powders, dispersions or granules. The mode of application depends exclusively on the intended use.

- 25 For the manufacture of sprayable solutions of the compounds of the general formula I there can be used for example mineral oil fractions of high to medium boiling range, (for example Diesel oil or kerosene), coal tar oil, oils of vegetable or animal origin, hydrocarbons (for example alkylated naphthalenes or tetrahydronaphthalene, if desired in conjunction with xylene mixtures, cyclohexanols or ketones), or chlorinated hydrocarbons (for example trichloroethane and tetrachloroethylene or tri- or tetra-chlorobenzenes). Advantageously, organic solvents whose boiling point is above 100° C are used.

- 30 It is especially advantageous to prepare aqueous forms of application from emulsion concentrates, pastes, or wettable spraying

powders by adding water. Suitable emulsifiers and dispersants are non-ionic, anion-active and cation-active products. Non-ionic products are as a rule condensation products of aliphatic alcohols, amines or carboxylic acids which contain a long-chain hydrocarbon radical with 10 to 20 carbon atoms, with ethylene oxide, as for example the condensation product of octadecyl alcohol and 25 to 30 mols of ethylene oxide or that of commercial oleylamine and 15 mols of ethylene oxide, or that of dodecylmercaptan and 12 mols of ethylene oxide. Among the anion-active emulsifiers mention may be made of: the sodium salt of dodecyl alcohol sulfuric acid ester, the sodium salt of dodecyl alcohol sulfonic acid ester, the sodium salt of dodecylbenzenesulfonic acid, the potassium or triethanolamine salt of oleic acid or of abietic acid or of mixtures of these acids, or the sodium salt of a petroleum sulfonic acid. Suitable cationic dispersants are quaternary ammonium compounds, for example cetyl pyridinium bromide or dihydroxyethylbenzyl dodecylammonium chloride.

Solid carriers suitable for the manufacture of dusting and scattering preparations are talcum, kaolin, bentonite, calcium carbonate, calcium phosphate, attapulgit, bentonite, kaolin, SiO_2 , polyacrylonitrile, and also carbon, corkmeal, woodmeal and other materials of vegetable origin. The manufacture of preparations in granular form is also very appropriate. As is usual in formulation practice, the various forms of application may contain substances which improve distribution, adhesion, rain resistance or penetration. Such substances are, for example, fatty acids, resins, glue, casein or alginates.

The agents of this invention may also be used jointly with fertilizers. Quantities of active ingredient of from 1 to 5 kg/ha may be used.

The following Examples illustrate the invention; the parts and percentages are by weight.

EXAMPLE 1.

N - (O,O - di - n - propyl - dithiophosphoryl-acetyl)-2-methylpiperidine (Compound No. 1)

A solution of 32.0 g of N-chloroacetyl-2-methyl piperidine (0.184 mol) in 200 ml of acetone is added dropwise while stirring to a solution of 45.0 g of the sodium salt of O,O - di - n - propyl - dithiophosphoric acid (0.191 mol) in 250 ml of acetone. During the addition, the temperature rises to 32°C and NaCl separates. The batch is then stirred for 1 hour at 50°C. The NaCl which has separated is then filtered off, and the solvent expelled under a pressure of 10 mm of Hg at 50°C. The desired compound remains behind as a yellowish, viscous oil which is practically pure according to analysis.

Yield: 57.5 g=91% of the theoretical yield

n_D^{20} 1.5258

P calculated

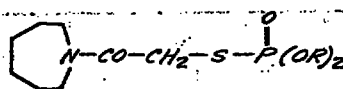
8.76%

P found

9.0%

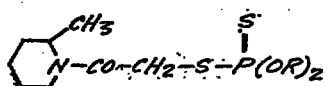
In an analogous manner, the active substances described in Tables I to VIII can be prepared:

TABLE I



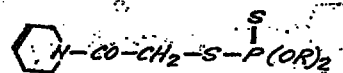
No.	R	P calculated	P found	n_D^{20}
2	allyl	8.86%	8.7%	1.5481
3	butyl	8.12%	8.0%	1.5239
4	2-methoxy-ethyl	8.04%	7.8%	1.5327

TABLE II



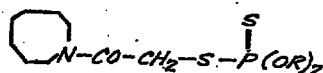
No.	R	P or N calculated	P or N found	n_D^{20}
5	methyl	P 10.42%	P 10.2%	1.5446
6	ethyl	P 9.52%	P 9.3%	1.5332
7	allyl	P 8.86%	P 8.5%	1.5430
8	butyl	N 3.67%	N 4.0%	1.5200
9	2-methoxy-ethyl	P 8.04%	P 7.5%	1.5262
10	2-ethoxy-ethyl	P 7.49%	P 7.6%	1.5204

TABLE III



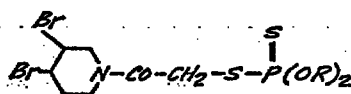
No.	R	P calculated	P found	n_D^{20}
11	methyl	11.01%	11.0%	1.5632
12	propyl	9.18%	9.2%	1.5386

TABLE IV



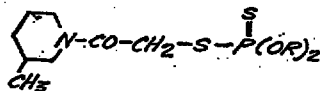
No.	R	calculated		found		n_D^{20}
		P	N	P	N	
13	methyl		4.5%		4.4%	1.5503
14	ethyl	9.12%		9.1%		1.5384
15	propyl	8.43%		8.6%		1.5304
16	allyl		3.85%		4.1%	1.5476
17	butyl	7.83%		8.0%		1.5241
18	2-methoxy-ethyl		3.51%		3.6%	1.5333
19	2-ethoxy-ethyl	7.24%		7.32%		1.5241

TABLE V



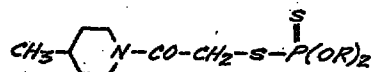
No.	R	Calculated		Found	
		P	Br	P	Br
20	methyl	7.02%		7.4%	
21	ethyl	6.60%		6.8%	
22	propyl	6.23%	32.14%	6.5%	31.2%

TABLE VI



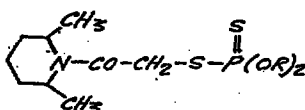
No.	R	calculated P	found P	n_D^{20}
23	ethyl	9.52%	9.5%	1.5315
24	propyl	8.76%	8.7%	1.5235
25	butyl	8.12%	8.1%	1.5178
26	2-ethoxy-ethyl	7.49%	7.5%	1.5184

TABLE VII



No.	R	calculated		found		n_D^{20}
		P	N	P	N	
27	ethyl	9.52%		9.5%		1.5310
28	propyl	8.76%		8.7%		1.5237
29	allyl		4.01%		4.0%	1.5387
30	2-methoxy-ethyl		3.63%		3.7%	1.5248

TABLE VIII



No.	R	calculated P	found P	n_D^{20}
31	methyl			
32	ethyl	9.12	8.8	1.5253
33	propyl	8.43	8.4	1.5429
34	allyl	8.52	8.58	1.5192
35	butyl	7.83	8.0	
36	2-methoxy-ethyl			
37	2-ethoxy-ethyl	7.24	7.13	1.5206

Active substances Nos. 1 to 37 are obtained as practically analytically pure oils when worked up.

EXAMPLE 2.

O,O - di - *n* - propyl - dithiophosphorylpropionyl - hexahydroazepine (Compound No. 38)

- 10 56.0 g of 99% potassium salt of O,O-di-*n*-propyl-dithiophosphoric acid (0.22 mole) are refluxed for 3 hours with 38.0 g of N- α -chloropropionyl - hexamethyleneimine (0.2 mole) and 1.0 g of sodium iodide in 150 ml of methyl ethyl ketone. After cooling, 200 ml of methylene chloride and 600 ml of water
- 15

are added, the organic phase is separated, washed with water, and dried over sodium sulfate. When the solution is distilled off at 60°C under a pressure of 11 mm of Hg, the phosphoric acid ester remains behind as a yellow, viscous oil.

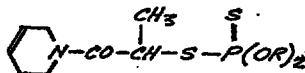
Yield: 75.5 g = 87% of the theoretical
 n_D^{20} 1.5196
 P calculated 8.43%
 P found 8.2%

In an analogous manner the compounds described in Tables IX to XI can be prepared:

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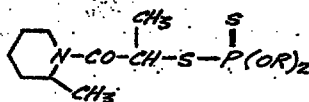
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TABLE IX



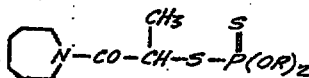
No.	R	P calculated	P found
39	ethyl	9.58%	9.6%
40	propyl	8.81%	8.7%

TABLE X



No.	R	calculated P	found P
41	ethyl	9.12%	9.1%
42	n-propyl	8.43%	8.4%

TABLE XI



No.	R	calculated P	found P
43	ethyl	9.12%	9.2%

EXAMPLE 3.

Emulsion concentrate.

(A) The active substances, which are readily soluble in organic solvents, can be formulated as emulsion concentrates as follows:

- 20 parts of active substance
 70 parts of xylene
 10 parts of a mixture of a reaction product of an alkyl phenol with ethylene oxide and calcium dodecyl benzene sulfonate are mixed together. On dilution with water to the desired concentration a sprayable emulsion is obtained.

(B) Alternatively, the active substance is so dissolved in acetone that a 50% solution is obtained. A 25% solution in xylene of a 1:1 emulsifier mixture of Toximul MP and Toximul Q (Toximul is a Trade Mark) is added, and the whole made up with xylene so that a 20% emulsion concentrate is formed. On dilution with water, a sprayable emulsion is obtained. (Toximul MP consists predominantly of calcium dodecyl benzene sulfonate, and Toximul Q predominantly of the condensation product of glycerine-dicricinoleate and ethylene oxide).

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EXAMPLE 4.

The following plants were sown in earthenware pots (in a hothouse): *Triticum*, *Hordeum*, *Avena*, *Zea*, *Oryza*, *Digitaria*, *Sorghum*, *Panicum*, *Poa*, *Alopecurus*, *Cyperus*, *Beta*, *Galium*, *Calendula*, *Chrysanthemum*, *Linum*, *Brassica*, *Ipomoea*, *Daucus*, *Soja*, *Gossypium* and *Amaranthus*. Active substance

No. 12 was used partly in the pre-emergence process, 1 day after seeding, using 2 and 4 kg/ha respectively (and inspected 3 weeks later), and partly in the post-emergence process. The results observed are shown in Table XII. Various other active substances were used solely in the pre-emergence process and the results are listed in Table XIII.

TABLE XII

Plant	Post-emergence		Pre-emergence	
	4 kg/ha	2 kg/ha	4 kg/ha	2 kg/ha
<i>Triticum</i>	1	1	1	1
<i>Hordeum</i>	3	1	1	1
<i>Avena</i>	2	1	1	1
<i>Zea</i>	5	5	1	1
<i>Oryza</i>	4	4	1	1
<i>Digitaria</i>	7	7	9	9
<i>Sorghum</i>	7	5	1	1
<i>Panicum</i>	6	6	8	7
<i>Poa</i>	7	6	7	6
<i>Alopecurus</i>	8	7	4	3
<i>Cyperus</i>	3	1	3	1
<i>Beta</i>	5	4	1	1
<i>Galium</i>	5	4	1	1
<i>Calendula</i>	1	1	—	—
<i>Chrysanthemum</i>	1	1	—	—
<i>Linum</i>	5	4	—	—
<i>Brassica</i>	9	6	—	—
<i>Ipomea</i>	5	3	—	—
<i>Daucus</i>	7	4	—	—
<i>Soja</i>	6	6	1	1
<i>Gossypium</i>	7	7	1	1
<i>Amaranthus</i>	7	7	1	1

TABLE XIII

Plant	Quantity used: 4 kg/ha Active Substance No.											Quantity used: 2 kg/ha Active Substance No.										
	5	1	21	15	3	32	6	2	14	8	7	5	1	21	15	3	32	6	2	14	8	7
<i>Triticum</i>	5	6	1	1	1	3	7	2	4	1	1	2	4	1	1	1	1	6	1	2	1	1
<i>Hordeum</i>	2	3	1	1	1	3	7	2	3	1	1	1	2	1	1	1	1	5	1	2	1	1
<i>Avena</i>	1	4	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<i>Zea</i>	5	4	1	1	1	4	7	1	5	1	1	4	2	1	1	1	3	6	1	3	1	1
<i>Oryza</i>	9	4	1	1	1	3	7	2	4	1	1	4	2	1	1	1	1	5	1	2	1	1
<i>Digitaria</i>	9	9	9	9	9	9	9	9	9	9	9	9	9	4	9	9	9	9	9	9	9	9
<i>Sorghum</i>	8	7	2	5	3	7	8	4	7	1	7	3	6	1	3	1	3	6	1	6	1	6
<i>Panicum</i>	9	9	6	9	7	9	9	9	9	8	8	8	8	3	7	6	5	9	7	8	6	8
<i>Poa</i>	8	9	4	9	9	9	9	9	9	6	9	7	9	1	9	8	7	9	9	9	5	6
<i>Alopecurus</i>	6	9	4	4	4	5	7	3	5	8	9	3	8	2	3	1	1	6	1	4	5	8
<i>Cyperus</i>	8	9	1	7	1	6	9	9	9	1	9	7	9	1	1	1	4	8	8	6	1	7
<i>Beta</i>	2	3	1	1	1	3	1	1	4	1	1	1	2	1	1	1	1	1	1	1	1	1
<i>Galium</i>	—	—	1	1	1	3	1	1	9	1	1	—	—	1	1	1	1	1	1	1	1	1
<i>Gossypium</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<i>Amaranthus</i>	1	9	1	1	1	1	5	1	5	1	3	1	9	1	1	1	1	4	1	1	1	3
<i>Soja</i>	3	2	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1

Key for Tables XII and XIII:

- 1=no damage
4-5=medium damage
9=plant completely destroyed
—=no test made

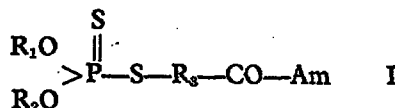
EXAMPLE 5.

Compound No. 38 was tested as to its action on powdery mildew of cucumber (*Erysiphe cichoriacearum* DC.).

- 10 Cucumber plants were grown in a hothouse and infested with spores of the test fungus. Two days after infestation the plants were sprayed with an aqueous liquor containing increasing quantities of the test preparation.
- 15 After 12 to 14 days the plants treated with at least 0.03% of active substance exhibited a 5% fungus infestation as compared to 100% infestation of the untreated control plants.

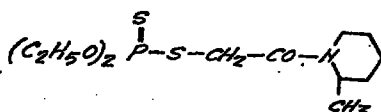
WHAT WE CLAIM IS:—

- 20 1. A dithiophosphate of the general formula I

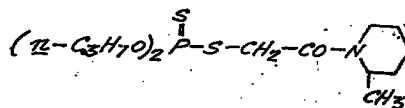


- wherein (i) R_1 and R_2 , which may be the same or different, each represents an alkyl radical having up to 5 carbon atoms, an allyl radical, a 2-methoxy-ethyl radical or a 2-ethoxy-ethyl radical; R_3 represents a methylene radical or an ethylidene radical; and Am represents one of the following
- 30 cyclic amines, which is attached to the carbonyl group *via* its nitrogen atom: 2-methylpiperidine, 3-methylpiperidine, 4-methylpiperidine, 2,6-dimethylpiperidine, 3,4-dibromopiperidine, 1,2,5,6-tetrahydropyridine, octahydroazocine; or wherein (ii) R_1 and R_2 , which may be the same or different, each represents a butyl, allyl or 2-methoxyethyl radical; R_3 represents a methylene radical; and Am represents a hexamethyleneimine radical
- 35 which is attached to the carbonyl group *via* its nitrogen atom; or wherein (iii) R_1 and R_2 , which may be the same or different, each represents an ethyl or an *n*-propyl radical; R_3 represents an ethylidene radical; and Am represents a hexamethyleneimine radical attached to the carbonyl group *via* its nitrogen atom.

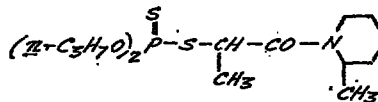
2. The dithiophosphate of the formula



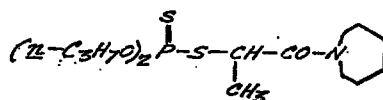
3. The dithiophosphate of the formula 50



4. The dithiophosphate of the formula

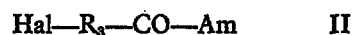


5. The dithiophosphate of the formula

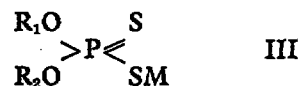


6. A dithiophosphate as claimed in Claim 1 and described in any one of the Examples herein.

7. A process for the manufacture of a dithiophosphate of the general formula I given in Claim 1, which process comprises reacting an α -halogenocarboxylic acid amide of the general formula II



- wherein Hal represents a halogen atom, and R_3 and Am have the meanings given in Claim 1, in a solvent with a dithiophosphate salt of the general formula III



- wherein M represents an alkali metal atom or an ammonium radical, R_1 and R_2 have the meanings given in Claim 1.

8. A process as claimed in Claim 7, wherein the reaction is effected in an organic solvent.

9. A process as claimed in Claim 8, wherein the solvent used is an aliphatic alcohol or an aliphatic ketone, each having up to 4 carbon atoms in the aliphatic chain.

10. A process as claimed in Claim 7 conducted substantially as described herein.

11. A process as claimed in Claim 7 conducted substantially as described in Example 1 or Example 2 herein.

12. A compound as claimed in Claim 1 whenever prepared by a process as claimed in any one of Claims 7 to 11.

13. A preparation for combating weeds and fungi which comprises a compound of the general formula I given in Claim 1, and at least one of the following additives: a solvent, diluent, dispersant, emulsifier, thickener, adhesive, fertilizer, insecticides, herbicides, fungicides, or another pest control agent.



* C L M S *

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Key for Tables XII and XIII:

1=no damage

4-5=medium damage

9=plant completely destroyed

—=no test made

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EXAMPLE 5.

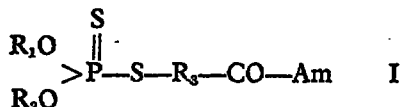
Compound No. 38 was tested as to its action on powdery mildew of cucumber (*Erysiphe cichoriacearum* DC.).

10 Cucumber plants were grown in a hothouse and infested with spores of the test fungus. Two days after infestation the plants were sprayed with an aqueous liquor containing increasing quantities of the test preparation.

15 After 12 to 14 days the plants treated with at least 0.03% of active substance exhibited a 5% fungus infestation as compared to 100% infestation of the untreated control plants.

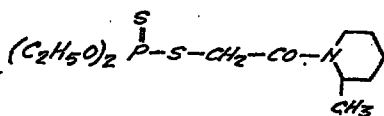
WHAT WE CLAIM IS:—

20 1. A dithiophosphate of the general formula I

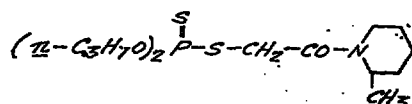


wherein (i) R_1 and R_2 , which may be the same or different, each represents an alkyl radical having up to 5 carbon atoms, an allyl radical, a 2-methoxy-ethyl radical or a 2-ethoxy-ethyl radical; R_3 represents a methylene radical or an ethylidene radical; and Am represents one of the following
 25 cyclic amines, which is attached to the carbonyl group *via* its nitrogen atom: 2-methylpiperidine, 3-methylpiperidine, 4-methylpiperidine, 2,6-dimethylpiperidine, 3,4-dibromopiperidine, 1,2,5,6-tetrahydropyridine, octahydroazocine; or wherein (ii) R_1 and R_2 , which may be the same or different, each represents a butyl, allyl or 2-methoxyethyl radical; R_3 represents a methylene radical; and Am represents a hexamethyleneimine radical
 30 which is attached to the carbonyl group *via* its nitrogen atom; or wherein (iii) R_1 and R_2 , which may be the same or different, each represents an ethyl or an *n*-propyl radical; R_3 represents an ethylidene radical; and Am represents a hexamethyleneimine radical
 35 attached to the carbonyl group *via* its nitrogen atom.

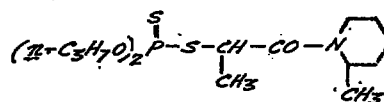
2. The dithiophosphate of the formula



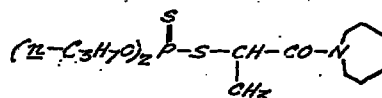
3. The dithiophosphate of the formula



4. The dithiophosphate of the formula



5. The dithiophosphate of the formula

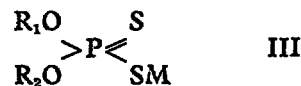


6. A dithiophosphate as claimed in Claim 1 and described in any one of the Examples herein.

7. A process for the manufacture of a dithiophosphate of the general formula I given in Claim 1, which process comprises reacting an α -halogenocarboxylic acid amide of the general formula II



wherein Hal represents a halogen atom, and R_3 and Am have the meanings given in Claim 1, in a solvent with a dithiophosphate salt of the general formula III



wherein M represents an alkali metal atom or an ammonium radical, R_1 and R_2 have the meanings given in Claim 1.

8. A process as claimed in Claim 7, wherein the reaction is effected in an organic solvent.

9. A process as claimed in Claim 8, wherein the solvent used is an aliphatic alcohol or an aliphatic ketone, each having up to 4 carbon atoms in the aliphatic chain.

10. A process as claimed in Claim 7 conducted substantially as described herein.

11. A process as claimed in Claim 7 conducted substantially as described in Example 1 or Example 2 herein.

12. A compound as claimed in Claim 1 whenever prepared by a process as claimed in any one of Claims 7 to 11.

13. A preparation for combating weeds and fungi which comprises a compound of the general formula I given in Claim 1, and at least one of the following additives: a solvent, diluent, dispersant, emulsifier, thickener, adhesive, fertilizer, insecticides, herbicides, fungicides, or another pest control agent.

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14. A preparation as claimed in Claim 13, and described in any one of the Examples which comprises a compound as claimed in any one of Claims 2 to 6 and 12.

15. A preparation as claimed in Claim 13 and described herein.

16. A preparation as claimed in Claim 13

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