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(54) Emulsifiable concentrate of a pesticide.

(57) A pesticidal composition with low crystal growth in the form of an emulsifiable concentrate of a pesticidal compound comprises

a) a water-insoluble crystalline pesticidal material
b) an organic solvent and
c) a surfactant,
d) a dimethylamide of a C_8 to C_{10} carboxylic acid.

The solubility of component (a) in component (b) alone is insufficient to permit the formation of a commercially acceptable concentrate, the organic solvent is miscible with component (d), and the solubility of water in component (b) is less than 1% by weight.

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Description

EMULSIFIABLE CONCENTRATE OF A PESTICIDE

This invention relates to pesticidal compositions, i.e. compositions comprising a pesticide such as an insecticide, herbicide, or fungicide.

In particular, the invention relates to such compositions in the form of emulsifiable concentrates, of water-insoluble pesticidal materials.

Of the many forms of preparations in which pesticidal compositions can be prepared, emulsifiable concentrates are very advantageous, because of their relatively low bulk for shipping purposes, coupled with the convenience of being able to apply the active material at any desired dilution, for convenient application at the locus of use. For this reason, emulsifiable concentrates of pesticidal materials are widely used, in the field of herbicides, pesticides, and fungicides.

Emulsifiable concentrates generally comprise one or more active material, a suitable solvent, and one or more surfactants, such as to ensure emulsification of the composition, on the addition of water.

Such compositions are widely used for a broad range of active materials. There is difficulty however in producing emulsifiable concentrates which are satisfactory in use, when the active material is a crystalline material which has negligible solubility in water. Although it is in general possible to produce solutions of such active materials, by the use of polar solvents such as N-methylpyrrolidone, cyclohexanone, isophorone, and dimethylformamide, and to incorporate surfactants such that the resulting composition will produce initially an emulsion on the addition of water, crystal growth of the pesticidal material in the dispersed phase tends to take place on standing because of migration of water from the aqueous phase to the dispersed phase and because of the migration of the polar solvent into the aqueous phase. A particular problem arises in this regard with the so-called acyl urea and acylthiourea classes of insecticides. For maximum biological efficacy, it is important that these active materials should be applied to the locus in solution, or at worst that they should have a particle size which is as small as possible, normally of the order of 1 micron or less.

When emulsions are prepared from an emulsifiable concentrate of such materials, crystal growth typically takes place rapidly, such that particles of the active material are formed in the emulsion droplets, which have a size substantially in excess of 1 micron.

U.S. Patent No. 3342673 discloses the use of certain dialkylamides, and in particular N,N-dimethyl caprylamide, as a solvent for certain carbamates. The resulting concentrated solutions can be utilised either as emulsifiable concentrates, or may be diluted with kerosene, and used as kerosene solutions.

When highly insoluble active materials, such as the acyl ureas and acyl thioureas mentioned above, are used as the active materials in a composition as proposed in U.S. Patent No. 3342673 however, migration of water into the non-aqueous phase after emulsification causes crystal growth of the active material, and results in the particle size of the resulting composition being less than optimum, within a short time of emulsification taking place.

US Patent 4213776 discloses herbicidal emulsifiable concentrates, in which an active material is dissolved in a combination of a water-immiscible ketone solvent and a water-miscible amide solvent. The amide co-solvent in this reference is employed simply to affect the low temperature properties of the concentrate composition, and when the composition is dispersed into an aqueous phase, will immediately migrate the aqueous phase. Thus, the techniques disclosed in this reference do not in any way improve the crystal growth characteristics of the composition.

We have now discovered that an improved pesticidal composition of such highly water-insoluble active materials can be prepared, by including within an emulsifiable concentrate composition of the active and a suitable dimethylamide, a co-solvent which is miscible with the dimethylamide, and in which water is soluble to an extent of not more than 1%.

Accordingly, in a first aspect of the invention, there is provided a pesticidal composition in the form of an emulsifiable concentrate of a pesticidal compound comprising:

a) a water-insoluble crystalline pesticidal material

b) an organic solvent (hereinafter referred to as a co-solvent) and

c) a surfactant,

wherein the solubility of component (a) in component (b) alone is insufficient to permit the formation of a commercially acceptable concentrate,

characterised in that the composition also comprises

(d) a dimethylamide of a C_8 to C_{10} carboxylic acid,

in that the co-solvent is miscible with component (d), and in that the solubility of water in component (b) is less than 1% by weight.

The term "crystalline" as used herein is intended to include any material which normally exists in a solid crystalline form at ambient temperatures (around 20° C). A crystalline material, as the term is intended to be understood, herein, is one which, when dissolved in acetone, and the acetone solution thrown into an excess of water, forms a solid crystalline precipitate.

The composition of the invention is particularly suitable for the formulation of pesticidal substances having a solubility in the solvent employed (component b) of not more than 5wt%, particularly not more than 2wt%, more particular not more than 1wt%. In particular type of compound which may suitably be formulated by the method of the invention are compounds of the formula:-

$R^1CO.NH.CX.NYR^2$

wherein R^1 is an aromatic or heteroaromatic ring optionally substituted with one or more halogen atom or alkoxy, haloalkoxy, nitro, cyano, thio or amino group;

X is oxygen or sulphur

Y is hydrogen or an alkyl or cycloalkyl group having from 1 to 6 carbon atoms,

and R^2 is an aromatic or heteroaromatic group, optionally substituted with one or more halogen atoms or with one or more amino, cyano, nitro, sulphenyl, alkyl, alkoxy, haloalkyl, haloalkoxy, carboxyalkyl, carboxylphenyl, oxyphenyl, oxypyridyl, oxypyrazinyl, aminoalkyl, aminophenyl, thioalkyl or thiophenyl group.

Particularly suitable for use in the compositions of the invention are the insecticides disclosed in GB 2082913A, and the following compounds:

1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea (common name Dimilin)

1-(3,5-dichloro-2,4-difluorophenyl)-3-(2,6-difluorobenzoyl) urea (common name Teflubenzuron)

1-[3,5-dichloro-4-((5-trifluoromethyl)-3-chloro -2-pyridyloxy)-phenyl]-3-(2,6-difluorobenzoyl) urea (common name Chlorfluazuron)

1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl) urea (common name Alsystin)

1-[3,5-dichloro-4-(1,1,2,2-tetra-fluoroethoxy) phenyl]-3-(2,6-difluorobenzoyl) urea (common name Hexafluron)

1-(2-fluoro-4-(2-chloro-4-trifluoromethyl-phenoxy) phenyl)-3-(2,61difluorobenzoyl) urea (common name Flufenoxuron), and

1-(4-(1,1-difluoro-2,2-dichloroethoxy)phenyl)-3-(2-chlorobenzoyl) urea.

The preferred cosolvents for use in the compositions of the invention are benzene or napthalene, substituted with from one to three C_1 to C_5 alkyl groups (for example xylene), alkyl esters containing from 5 to 10 carbon atoms (for example hexyl acetate or heptyl acetate), chlorinated hydrocarbons, (e.g. 1,1,1-trichloroethane), polyisobutene, or alkylated cyclohexanones (e.g. 3,3,5-trimethyl- cyclohexanone).

In a particularly preferred embodiment, the cosolvent may itself have pesticidal activity. Suitable examples of such cosolvents having pesticidal activity are the following:-

Aldicarb
Aldrin
Allethrin
Amitraz
Azamethiphos
Azinphos-ethyl
Azinphos-methyl
Bendiocarb
Benfuracarb
Bensultap
Benzoximate
Bifenthrin
Binapacryl
Bioallethrin
Bioresmethrin
Bromophos
Bromophos ethyl
Bromopropylate
Buprofezin
Camphechlor
Carbaryl
Carbophenothion
Chlordane
Chlordimeform
Chlorfenson
Chlorfenvinos
Chlormephos
Chlorbenzilate
Chlormethiuron
Chloropropylate
Chlorphoxim
Chloethocarb
Chlorpyrifos
Chlorpyrifos-methyl
Crotoxyphos
Cyanophos
Cyfluthrin
Cyhalothrin
Cypermethrin
Deltamethrin
Demeton
Demeton-S-methyl Dailifos
Diazinon
0-2,4-Dichlorophenyl
O-ethyl-phenylphosphonothioate
Dicofol
Dinobuton
Dinocap
Dioxacarb
Dioxabenzofos
Dioathion
Disulfoton
Endosulfan
EPN
Ethiofencarb
Ethion
Etrimfos
Fenbutatin oxide
Fenitrothion
Fenobucarb
Fenothiocarb
Fenoxycarb
Fenpropathrin
Fenson
Fensulfothion
Fenthion
Fentin acetate
Fenvalerate
Flubenzimine
Flucythrinate
Fluvalinate
Fonofos
Formetanate
Formothion
Furathiocarb
Lindane
Heptachlor
Heptenophos
Hexythiazox
Hydroprene
Isofenphos
Isoprocarb
Isothioate

Malathion
Mecarbam
Mephosfolan
Methacrifos
Methidathion
Methiocarb
Methoprene
Methoxychlor
Parathion
Parathion methyl
Permethrin
Phenothrin
Phenthoate
Phorate
Phosalone
Phosmet
Phoxim
Piperonyl butoxide
Pirimicarb
Pirmiphos-ethyl
Pirimiphos-methyl
Profenofos
Promecarb
Propaphos
Propargite
Propetamphos
Propoxur
Prothiofos
Prothoate
Pyrazophos
Pyrethrins
Quinalphos
Quinomethionate
Resmethrin
Sulfotap
Sulprofos
Tefluthrin
Temephos
Tetrachlorvinphos
Tetradifon
Tetramethrin
Thiodicarb
Thiometon
Tralomethrin
Triazophos
2,2,2-trichloro-1-(3,4-dichlorophenyl)-ethyl acetate
xylylcarb
3,5-xylylmethyl-carbamate

The surfactant in accordance with the invention may be selected from the known range of anionic, nonionic and cationic emulsifiers. The type and amount of surfactant to be employed is such as to ensure that the resulting composition is readily emulsifiable in water, and although the type and amount of surfactant to be employed will vary, depending on the precise nature of the composition, selection of an appropriate type and amount of surfactant is well within the competence of one skilled in the art. A list of suitable surfactants may be found, for example in "McCutcheon's Emulsifiers and Detergents" (1985 Edition).

Examples of anionic surfactants are the alkali metal, alkaline earth and amine salts of dodecyl benzene sulphonic and or other alkylarylsulphonic acids, sodium dialkyl sulphosuccinate such as sodium diisoctylsulphosuccinate and the amine salts of ether sulphates.

Examples of nonionic surfactants are fatty acid alkanolamides, the condensation products of fatty acid esters, fatty alcohols, fatty acid amides or fatty amines with ethylene and/or propylene oxide, alkyl-, alkenyl or polyaryl-substituted phenols with ethylene and/or propylene oxide, fatty esters of polyhydric alcohol esters e.g. sorbitan fatty acid esters, condensation product of such esters with ethylene oxide, e.g. polyoxyethylene sorbitan fatty acid esters, block copolymers of ethylene oxide and propylene oxides, ethoxylated lanolin alcohols or ethoxylated lanolin acids. Examples of a cationic surfactants include, for instance, acetates and oleates of aliphatic mono-, di- or polyamines.

Anionic/nonionic blends are preferred and are often advantageously chosen as preblended systems for ease of handling, reproducibility and cost effectiveness. Such systems are well known to those skilled in the art and include those sold under the Trade Marks TENSIOFIX B.7416, B.7438 and B.7453 and ATLOX 4851B and 4855B.

The amount of the water-insoluble crystalline pesticidal material which may be utilised in the compositions of the invention may vary within a wide range, but will generally be in the range of from 0.1 to 50% by weight, preferably from 1 to 40% by weight, more preferably from 5 to 20% by weight of the composition. The amount of dimethylamide employed will generally be in the range of from 5 to 90% by weight, preferably from 10 to 50% by weight, more preferably from 15 to 30% by weight of the composition.

The amount of the cosolvent employed will also depend very much on the nature of the cosolvent employed. Generally however the amount will be in the range of 5 to 90% by weight, preferably from 15 to 80% by weight, more preferably from 30 to 70% by weight.

The amount of surfactant employed in the formulation of the composition must be sufficient to emulsify the other components on the addition of water, and will generally be from 1 to 40% by weight, preferably from 2 to 20% by weight, more preferably from 5 to 15% by weight of the composition.

A number of preferred embodiments of the invention are illustrated in the following examples. The "dimethylamide" used in all of the examples was a mixture of the dimethylamides of capric, caproic, and caprylic acids.

All of the compositions were prepared by simple mechanical agitation of the ingredients toegether, using a Silveron (Trade Mark) high shear mixer. The nature and water solubility of the various cosolvents employed are as noted in Table 1.

Table 1

	Solubility of water in solvent (H20/Solv)
chlorpyrifos	.0002% w/w
ethiofencarb	0.18% w/w
fenitrothion	0.0014% w/w
endosulfan	0.0032% w/w
methoprene	0.00014% w/w
cypermethrin	0.00004% w/w
xylene	0.87% w/w
Dipropylene glycol monomethyl ether (Trade Mark DOWANOL DPM)	miscible
propylene glycol phenyl ether (Trade Mark (DOWANOL PPH)	1.17% w/w
isophorone	3.8% w/w
cyclohexanone	8.7% w/w
dimethoate	2.5% w/w

Example 1	g
Hexafluron	50
Dimethylamide	200
Anionic/nonionic blended surfactant A (Trade Mark TENSIOFIX B7438)	40
Anionic/nonionic blended surfactant B (Trade Mark TENSIOFIX B7453)	30
Cocoamine ethoxylate (Trade Mark ETHOMEEN C-25)	30
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 2	g
Chlorfluazuron	50
Dimethylamide	300
Anionic/nonionic blended surfactant A (Trade Mark TENSIOFIX B7435)	40
Anionic/nonionic blended surfactant B (Trade Mark TENSIOFIX B7458)	30
Cocoamine ethoxylate (Trade Mark Ethomeen C-25)	30
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 3	g
Diflubenzuron	10
Dimethyl amide	400
Anionic/nonionic blended surfactant A (Trade Mark TENSIOFIX B7438)	400
Anionic/nonionic blended surfactant B (Trade Mark TENSIOFIX B7453)	30
Cocoamine ethoxylate (Trade Mark ETHOMEEN C-25)	40
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 4	g
1-(4-(1,1-difluoro-2,2-dichloroethoxy) phenyl)-3-(2-chlorobenzoyl) urea	50
Dimethylamide	300
Anionic/nonionic blended surfactant A (Trade Mark TENSIOFIX B7438)	40
Anionic/nonionic blended surfactant B (Trade Mark TENSIOFIX B7453)	30
Cocoamine ethoxylate (Trade Mark ETHOMEEN C-25)	30
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 5	g
Hexafluron	30
Chlorpyrifos	480
Dimethylamide	150
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40E0 (Trade Mark BIOSOFT HR40)	70
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 6	g
Hexafluron	50
Ethiofencarb	100
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40E0 (Trade Mark BIOSOFT HR40)	70
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 7	g
Hexafluron	50
Chlorpyrifos	480
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40E0 (Trade Mark BIOSOFT HR40)	40
Castor oil ethoxylate + 55EO (Trade Mark BIOSOFT HR55)	30
Dimethylamide	200
Xylene	Balance to 1 litre

A 1% dilution in water produced an excellent emulsion and no evidence of crystallisation after 24 hours.

Example 8	g
Hexafluron	50
Fenitrothion	500
Coconut Diethanolamide (Trade Mark ETHYLAN LD)	20
Castor oil ethoxylate + 33E0	80
Dimethylamide	Balance to 1 litre

A 1% dilution in water produced a good emulsion. No evidence of crystallisation of the active ingredients was observed after 24 hours.

Example 9	g
Hexafluron	30
Endosulfan	480
Anionic/nonionic blended Surfactant A	50
Castor oil ethoxylate + 54E0	50
Dimethylamide	Balance to 1 litre

A 1% dilution in water produced a good emulsion. No evidence of crystallisation of the active ingredients was apparent after 24 hours.

Example 10	g
Hexafluron	30
Methoprene	600
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40E0 (Trade Mark BIOSOFIX HR40)	30
Castor oil ethoxylate + 55EO (Trade Mark BIOSOFT HR55)	40
Dimethylamide	Balance to 1 litre

A 1% dilution in water produced a good emulsion. On standing for 24 hours there was no evidence of crystallisation of the active ingredient.

Example 11	g
Hexafluron	50
Cypermethrin	50
Anionic/nonionic blended surfactant (Trade Mark ATLOX 4855B)	20
Castor oil ethoxylate + 50E0	80
Dimethylamide	Balance to 1 litre

A 1% dilution in water produced a good emulsion. On standing for 24 hours no crystallisation of active ingredient was apparent.

The compositions prepared were all highly biologically active.

It will be appreciated that it may sometimes be quite difficult to select the appropriate combination of surfactants to produce an emulsifiable concentrates for a particular combination of active material and cosolvent. This tends to be a difficulty in particular when the cosolvent is itself pesticidally active. In such circumstances, the optimum blend of active material and emulsifiers may be determinable only by extensive trial and error, but such is well within the competence of one skilled in the art. The important feature of the compositions of the present invention is that even those which are difficult to emulsify do not show crystallisation of the crystalline pesticide component on standing.

A number of additional compositions were prepared for comparison purposes, to illustrate the effect of using cosolvents with water solubility of greater than 1%. The composition were prepared in the same manner as Examples 1 to 11 above,

Comparative Example 1	g
Hexafluron	50
Dimethylamide	200
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Dowanol DPM	Balance to 1 litre

A 1% dilution in water produced a very poor emulsion which on standing deposited a white crystalline solid after 4 hours.

Comparative Example 2	g
Hexafluron	50
Dimethylamide	200
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Dowanol PPH	Balance to 1 litre

A 1% dilution in water produced a poor emulsion. On standing a white crystalline solid was deposited after 24 hours.

Comparative Example 3	g
Hexafluron	50
Dimethylamide	200
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Isophorone	Balance to 1 litre

A 1% dilution in water produced a moderate emulsion. On standing the system produced a trace of cream plus a white crystalline deposit after 24 hours.

Comparative Example 4	g
Hexafluron	50
Dimethylamide	200
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Cyclohexanone	Balance to 1 litre

A 1% dilution in water produced a poor emulsion. On standing the solution deposited 0.2% v/v of a white crystalline solid after 24 hours.

Comparative Example 5	g
Hexafluron	50
Dimethoate	500
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Dimethylamide	Balance to 1 litre

A 1% dilution in water produced a poor emulsion which on standing for 24 hours deposited 0.25% of a white crystalline solid.

Comparative Example 6	g
Hexafluron	50
Dimethylamide	200
Calcium dodecylbenzene sulphonate (Trade Mark AGRILAN X-98)	30
Castor oil ethoxylate + 40EO (Trade Mark BIOSOFT HR40)	70
Dimethoate	500

A 1% dilution in water produced a very poor emulsion which on standing for 24 hours produced 0.59% v/v of a white crystalline material.

Comparative Example 7	g
Hexafluron	230
Dimethylamide	700
Sorbitan monolaurate + 20E0 (Trade Mark TWEEN 20)	35
Calcium dodecyl benzene sulphonate (Trade Mark AGRILAN X-98)	17.5
Amino-dodecyl benezene sulphonate (Trade Mark NINATE 411)	17.5

A 1% dilution in water produced a reasonable emulsion which on standing for 24 hours deposited a white crystalline solid.

Comparative Example 8	g
1-(4-1,1-difluoro-2,2-dichloro ethoxy) phenyl)-3-(2-chlorobenzoyl) urea	50
dimethyl formamide	70
anionic/nonionic surfactant blend (Trade Mark Toximul R)	30
Nonionic surfactant (TM Atlox 1096)	40
Octan-1-ol	5
Isophorone	Balance

(Atlox 1096 as sold in the UK is equivalent to the material sold as Atlox 1196 in the USA) A 1% v/v dilution of this concentrate in 500ppm $CaCO_3$ equivalent water at 20°C gave rise to the formation of a white precipitate in less than 24 hours.

Comparative Example 9	g
(4-chlorphenyl)3-(2,6-difluorobenzoyl) urea	30
dimethyl formamide	200
Toximul R	30
Atlox 1096	25
Octan-1-ol	5
Isophorone	Balance

A 1% v/v dilution of this concentrate in 500ppm $CaCO_3$ equivalent water at 20°C gave rise to the formation of a white crystalline precipitate in under 24 hours.

Claims

1. A pesticidal composition in the form of an emulsifiable concentrate of a pesticidal compound comprising:

a) a water-insoluble crystalline pesticidal material

b) an organic solvent and

c) a surfactant,

wherein the solubility of component (a) in component (b) alone is insufficient to permit the formation of a commercially acceptable concentrate,

characterised in that the composition also comprises

(d) a dimethylamide of a C_8 to C_{10} carboxylic acid,

in that the said organic solvent is miscible with component (d), and in that the solubility of water in component (b) is less than 1% by weight.

2. A composition as claimed in Claim 1, wherein the water insoluble crystalline pesticidal compound is a compound of the formula $R^1CO.NH.CX.NYR^2$ wherein R^1 is an aromatic or heteroaromatic ring optionally substituted with one or more halogen atom or alkoxy, haloalkoxy, nitro, cyano, thio or amino group;
X is oxygen or sulphur
Y is hydrogen or an alkyl or cycloalkyl group having from 1 to 6 carbon atoms,
and R^2 is an aromatic or heteroaromatic group, optionally substituted with one or more halogen atom or with one or more amino, cyano, nitro, sulphenyl, alkyl, alkoxy, haloalkyl, haloalkoxy, carboxyalkyl, carboxylphenyl, oxyphenyl, oxypyridyl, oxypyrazinyl, aminoalkyl, aminophenyl, thioalkyl or thiophenyl group.

3. A composition as claimed in Claim 2, wherein the pesticide is:-
1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea,
1-(3,5-dichloro-2,4-difluorophenyl)-3-(2,6-difluorobenz oyl) urea,
1-[3,5-dichloro-4-((5-trifluoromethyl)-3-chloro-2-pyridyloxy)-phenyl]-3-(2,6-difluorobenzoyl) urea,
1-(4-trifluoromethoxyphenyl)-3-(2-chlorobenzoyl) urea,
1-[3,5-dichloro-4-(1,1,2,2-tetra-fluoroethoxy)phenyl3-(2,6-difluorobenzoyl) urea,
1-(2-fluoro-4-(2-chloro-4-trifluoromethyl-phenoxy) phenyl)-3-(2,61difluorobenzoyl) urea, or
1-(4-(1,1-difluoro-2,2-dichloroethoxy)phenyl)-3-(2-chlorobenzoyl) urea.

4. A composition as claimed in any one of Claims 1 to 3, wherein the water insoluble crystalline pesticide is present in an amount of from 1 to 40% by weight of the composition.

5. A composition as claimed in Claim 4, wherein the water insoluble crystalline pesticide is present in an amount of from 5 to 20% by weight of the composition.

6. A composition as claimed in any one of the preceding claims, wherein the dimethylamide is present in an amount of from 10 to 50% by weight of the composition.

7. A composition as claimed in Claim 6, wherein the dimethylamide is present in an

amount of from 15 to 30% by weight of the composition.

8. A composition as claimed in any one of the preceding claims, wherein the said organic solvent is benzene or naphthalene substituted with from one to three C_1 to C_5 alkyl groups, an alkyl ester containing from 5 to 10 carbon atoms, a chlorinated hydrocarbon, a polyisobutene, or an alkylated cyclohexanone.

9. A composition as claimed in any one of the preceding claims, wherein the said organic solvent is pesticidally active.

10. A composition as claimed in any one of the preceding claims wherein the said organic solvent is present in the composition in an amount of from 15 to 80% by weight.

11. A composition as claimed in Claim 10 wherein the said organic solvent is present in the composition in an amount of from 30 to 70% by weight.

12. A composition as claimed in any one of the preceding claims wherein the surfactant is present in an amount of from 2 to 20% by weight of the composition.

13. A composition as claimed in Claim 12 wherein the surfactant is present in an amount of from 5 to 15% by weight of the composition.

14. A composition as claimed in as one of the preceding claims, wherein the solubility of component a) in component (b) is not more than 2%.

15. A composition as claimed in Claim 14, wherein the solubility of component (a) in component (b) not more than 1%.

16. A process of preparing a pesticidal composition comprising mixing components (a) (b) (c) and (d) as specified in one of the preceding Claims.