

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) INSECTICIDAL COMPOSITIONS

(71) We, SECTO COMPANY LIMITED, of Shaw Street Works, Blackburn, Lancashire, a British Company, 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:—

The invention relates to insecticidal compositions.

Insecticidal compositions are known which are functional as general insect poisons on contact, by ingestion or by inhalation and have been widely used as sprays, dusts or baits. Insecticides such as 2,2 dichlorovinyl dimethyl phosphate (hereinafter referred to as DDVP) are known for use in such compositions. DDVP has a relatively high vapour pressure and whilst generally stable under dry conditions readily hydrolyses when in contact with moisture. In view of these properties, which are disadvantageous in the use of this compound as an insecticide, various different forms of compositions containing DDVP have been proposed to enable it to be effectively dispensed. Thus it has been proposed to impregnate solid inert carrier materials such as cork, paper, wood, sawdust, cotton, vermiculite, clays or porous ceramics with compositions containing DDVP in order to increase its effective life or persistence and ability to be released to the surrounding atmosphere at a controlled rate. It has been found however that the use of such carrier materials tended to shorten the effective life of the compound and that also the carrier materials contained traces of water difficult to remove or absorbed moisture from the atmosphere, resulting in the degradation of the DDVP generally thought to be due to hydrolysis.

It is an object of the present invention to provide an insecticidal composition comprising an insecticide which may be employed in a readily dispensable form without any of the aforesaid disadvantages.

Accordingly the present invention is an insecticidal composition comprising 2,2-dichlorovinyl dimethyl phosphate (DDVP)

containing 5 to 20% by weight of dissolved hexachloroethane, paradichlorobenzene, naphthalene, a naphthalene derivative, camphor or quinone. 50

The use of paradichlorobenzene (PDCB) is particularly preferred in the composition with the DDVP. Paradichlorobenzene is itself well known as an insecticide for example as a moth repellent and killer, consequently when used in the insecticidal composition of the present invention exhibits the combined insecticidal properties whilst the hydrophobic nature of the PDCB protects the DDVP from attack by moisture. 60

According to one embodiment of the present invention the insecticidal compositions may be conveniently dispensed by impregnating a porous solid inert carrier substance with the composition. In this form absorbed upon the carrier it is found that the compound contained in the DDVP in the composition acts as a "waterproofing agent" for the insecticide preventing hydrolysis in the presence of moisture whilst at the same time, since it itself is volatile, allowing the insecticidal vapour to emerge from the carrier in a controlled manner. In this form the insecticidal composition of the present invention finds application in domestic surroundings, in industrial premises, greenhouses, warehouses and storage places for foodstuffs, grains and cereals. The carrier may be any material of a porous nature or having a cell-like structure of suitable absorbency and an inert chemical reaction. Examples of suitable carrier materials are inert powders such as gypsum, pumice, kaolin or bentonite, cotton, wood, leather, ceramic, finely-woven products or artificial products produced from a homogenisation of particles, such as paper, cork, board, cord, string or felt. The carrier material is preferably employed in the form of a shaped article. The preferred carrier material is a fired ceramic body preferably in the form of a plate. In practice these porous ceramic plates impregnated with the insecticidal compositions according to the present invention, may be marketed in a vapour-proof package e.g. a heat sealed 90

lamine of tinfoil and polythene and when required for use may be hung by a cord threaded through a hole in the material or be mounted in a suitable device or holder, for example a lantern of the design illustrated in the drawing accompanying the Provisional Specification which shows a perspective view of a lantern of attractive design constructed to hold three rectangular ceramic plates.

Referring to the drawing a triangular lantern which may be fabricated of say cardboard and which may be folded flat when not in use carries three ceramic plates 2 one adjacent to each side of the lantern. A loop 3 of string or other suitable material is provided at the top of the lantern for carrying or suspending in a suitable position. The purpose of the lantern device is to present an adequate and predetermined area of surface to enable the volatilisation of the insecticidal composition to take place at a rate suitable to the conditions under which it is to be employed.

The present invention is illustrated with reference to the following example.

EXAMPLE — A lantern such as that described above with reference to the drawing consists of three ceramic plates of convenient size, e.g.

16 × 5.5 × 0.3 cm. suspended in a triangular card frame.

Each plate is impregnated to a total of 25% by weight with the preferred composition, that is to say, a solution composed of 20 parts of P.D.C.B. and 80 parts of D.D.V.P., the resultant plates therefore containing 20% of D.D.V.P. and 5% by weight of P.D.C.B. which combination is slowly vaporised on exposure to air.

The lantern was hung from the centre of the ceiling of a 1000 ft. 3 empty test room which remained closed and unventilated except when entered twice a week to check conditions or when fly tests were carried out. The temperature was maintained at 21°C (70°F) and the relative humidity at 50% ± 5%.

Tests with Standard Reference Strain house flies were carried out after 1 week and then at 2 weekly intervals until the ninth week and weekly intervals from then until the 12th week. About 200 flies were released into the treatment room and knock downs noted until complete. The results are given in the table. Very satisfactory results were still obtained even after 12 weeks.

Percentage Knock Down of Flies (about 200 used)

Weeks	Observation Times 30 (minutes)
1	100
3	100
5	100
7	100
9	100
11	100
12	100

WHAT WE CLAIM IS:—

1. An insecticidal composition comprising 2,2-dichlorovinyl dimethyl phosphate (DDVP) containing 5 to 20% by weight of dissolved hexachloroethane, paradichlorobenzene, naphthalene, a naphthalene derivative, camphor, or quinone.

2. A porous solid inert carrier substance

impregnated with an insecticidal composition as claimed in Claim 1.

3. An impregnated porous solid inert carrier substance as claimed in Claim 2 wherein the carrier substance is a shaped article fabricated of gypsum, pumice, kaolin, bentonite, cotton, wood, cork, leather, ceramic, paper, board, cord, string or felt.

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3. An impregnated porous solid inert carrier substance as claimed in Claim 2 wherein the carrier substance is a shaped article fabricated of gypsum, pumice, kaolin, bentonite, cotton, wood, cork, leather, ceramic, paper, board, cord, string or felt.



4. An impregnated porous solid inert carrier substance as claimed in Claim 3 wherein the carrier substance is a fired ceramic plate. scribed with reference to the Example and the drawing accompanying the Provisional Specification.
5. An insecticidal composition as claimed in Claim 1 substantially as hereinbefore described with reference to the Example and the drawing accompanying the Provisional Specification.
- 5 in Claim 1 substantially as hereinbefore described with reference to the Example and the drawing accompanying the Provisional Specification.

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