

[54] **DETECTION SYSTEM FOR
INSECTICIDES**

[72] Inventor: **Arnold W. Blomquist**, St. Paul, Minn.

[73] Assignee: **Sci-Med, Inc.**, Minneapolis, Minn.

[22] Filed: **June 8, 1970**

[21] Appl. No.: **44,136**

[52] U.S. Cl. **73/425, 23/259**

[51] Int. Cl. **G01n 1/04**

[58] Field of Search **73/425.4, 38; 33/126.4;**
23/253, 259, 292; 210/359, 164

[56] **References Cited**

UNITED STATES PATENTS

1,581,717	4/1926	Bowen	33/126.4 R
2,333,711	11/1943	Dwiggins.....	33/126.4 R
3,554,700	1/1971	Maxon.....	23/292 X

FOREIGN PATENTS OR APPLICATIONS

886,026 1/1962 Great Britain 73/38

Primary Examiner—**Louis R. Prince**

Assistant Examiner—**William A. Henry, II**

Attorney—**Wayne B. Easton**

[57] **ABSTRACT**

The invention relates to a kit for obtaining samples in solution form of spills of suspected organo-phosphorous insecticides. An essential part of the kit is a small sponge saturated with a solvent such as chloroform. The sponge is attached to a tubular handle and, in operation, the sponge is pressed down on a small quantity of the suspected insecticide which becomes dissolved into the solvent to form a solution containing the suspected insecticide. Upon lifting the sponge a portion of the solution is drawn into the sponge. A portion of the solution drawn into the sponge is caused to be directed into and retained in the bore of the handle where it is then available for analysis.

5 Claims, 3 Drawing Figures

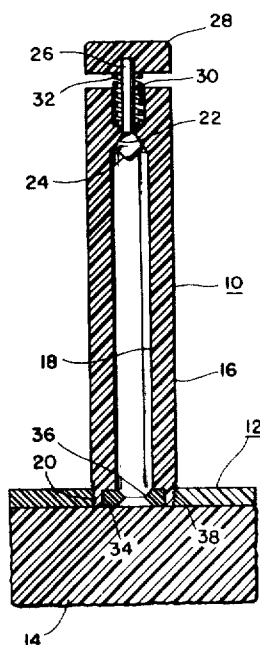


Fig 1

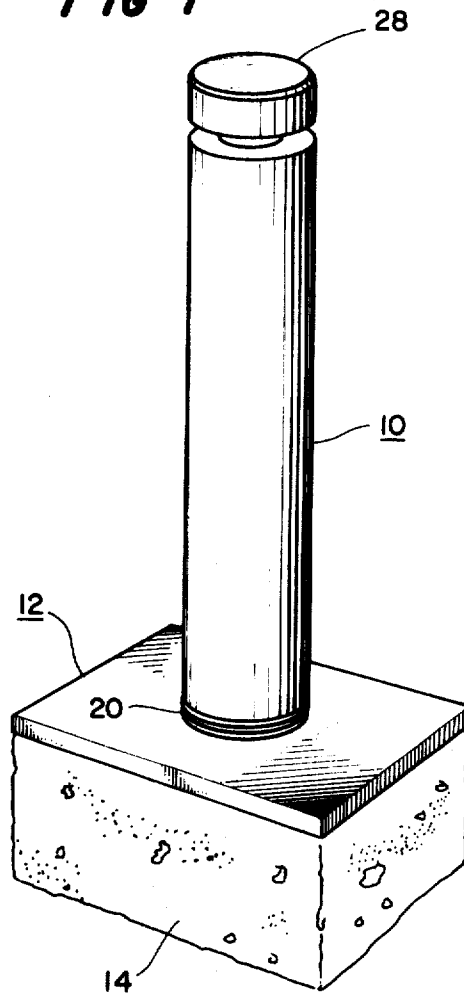


Fig 2

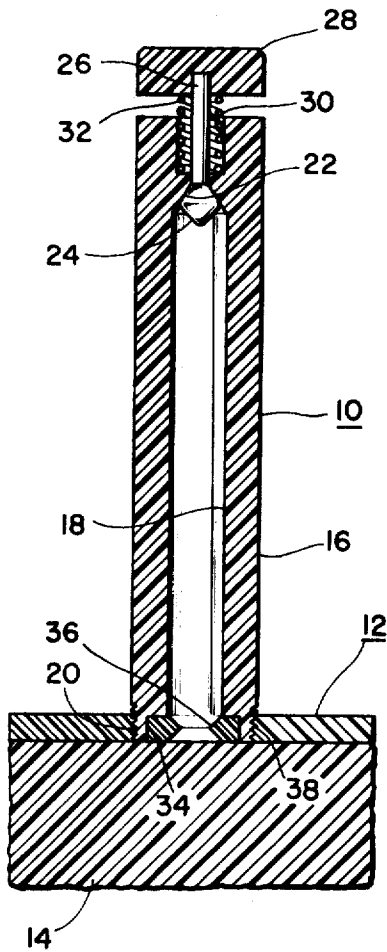
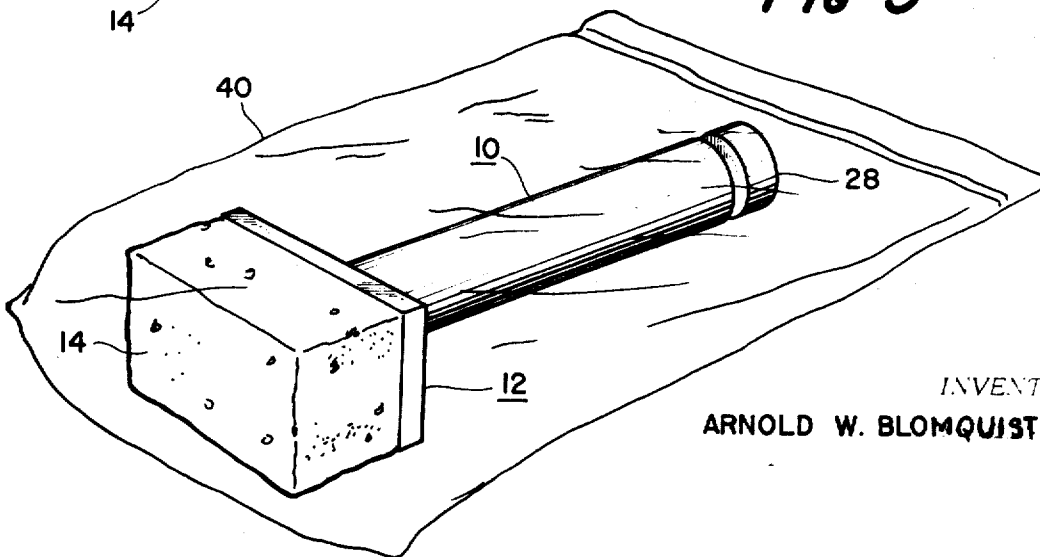


Fig 3



INVENTOR
ARNOLD W. BLOMQUIST

DETECTION SYSTEM FOR INSECTICIDES

The invention relates to a kit for obtaining samples in solution form of spills of suspected organo-phosphorous insecticides.

Organic phosphate ester insecticides are known to be hazardous to handle because of their toxicity to man and are known to cause non-fatal poisonings and deaths to agricultural workers and pest control personnel. Spillage of these insecticides occurs during handling and transporting them and often the spills are not noticed at the time they occur. Persons who inadvertently and unknowingly come in contact with these spills are adversely affected but are not aware of it until some time later when the harmful effects of it such as damage to the nervous system become apparent. Known medical treatments at an early stage would be very beneficial but there is of course a natural lethargy to seeking such treatments if there is a degree of doubt or uncertainty that any poisoning of the body has actually occurred.

The present invention is directed to a kit for obtaining samples in solution form of spilled materials which are suspected of being organo-phosphorous insecticides. If a subsequent analysis of such a sample confirms the suspicion, persons known to have had contact with the spill can be advised of the possible or even probably poisoning effect upon them and with this knowledge they will have a strong incentive to seek immediate medical attention.

A kit embodying the present invention includes as an essential part thereof a small sponge saturated with a solvent such as chloroform. The sponge is attached to a tubular handle and, in operation, the sponge is pressed down on a small quantity of the suspected insecticide which becomes dissolved into the solvent to form a solution containing the suspected insecticide. Upon lifting the sponge a portion of the solution is drawn into the sponge. In a manner to be described a portion of the solution drawn into the sponge is caused to be directed into and retained in the bore of the handle where it is then available for analysis.

Field testing of the solution in the handle bore may be accomplished in a known manner with an enzyme impregnated ticket so that it may be determined immediately whether the suspicion which prompted the sampling was correct.

A main object of the invention is to provide a new and improved sampling kit for easily and readily obtaining in solution form spilled materials which are suspected of being poisonous organo-phosphorous insecticides.

Other objects of the invention will become apparent from the following specification, drawings and appended claims;

FIG. 1 is a perspective view of a sampler device for sampling spills of suspected organo-phosphorous insecticides which embodies the invention;

FIG. 2 is a sectional view of the sampler device shown in FIG. 1; and

FIG. 3 is a perspective view which shows the sampler device of FIG. 1 disposed in sealed plastic container.

With reference to the drawing the sampler device comprises a tubular handle portion 10, a base member 12 threadedly attached to the handle portion and a sponge member 14 cemented or bonded to the base member.

Handle portion 10 comprises a tubular or cylindrically shaped member 16 made of any suitable material such as a plastics material. Handle 10 has a central bore 18 and external threads 20 at the lower end thereof. A valve seat 22 is formed at the upper end of bore 18 and a complementary valve 24 having a valve stem 26 seats on the valve seat. A button 28 for actuating valve 24 is attached to the valve stem 26. A short bore 30 at the upper end of tubular member 16 houses a coil spring 32 which biases button 28 in an upwardly direction so that valve 24 is normally held in a closed or seated position against valve seat 22. With valve 24 seated a vacuum may be maintained in the bore 18.

The lower end of tubular member 16 has a counterbore 34 in which is fixedly inserted an annularly shaped constrictor member 36 having an internal diameter smaller than the diameter of bore 18.

Base member 12 has the form of a rectangularly shaped plate and may be made from any suitable material such as a plastic material. Base member 12 is generally rigid and has a centrally disposed threaded bore 38 by which the base member is attachable to the handle 10. Sponge member 14 has a capacity for absorbing liquids, as its name implies, and may be made of several different suitable materials including silicone rubber. Sponge member 12 has the same exterior dimensions as base member 12 except that it is several times thicker.

A kit as shown in FIG. 3 is made up by first soaking the sponge 14 with a solvent such as chloroform and then sealing the device shown in FIG. 1 in a container such as a plastic bag 40 which is sealed as by heat sealing to make the bag vapor-tight so that the solvent is retained for a long period of time without loss.

When a suspected spill is to be sampled the bag 40 is opened and the device is withdrawn. A small quantity of the suspected spill material is isolated and the sponge 14 is pressed into contact with the spilled material to cause compressing of the sponge and the expelling of the solvent. The expelled solvent dissolves the spill material to form a solution and the subsequent lifting and expansion of the sponge has the effect of drawing the solution into the sponge. The alternate pressing and raising of the sponge as described may be repeated one or more times as needed to draw increasing amounts of spill material into solution and to draw increasing amounts of solution into the sponge.

With the sponge 14 in its expanded position the valve 24 is opened by pressing the button 28. The sponge is then compressed to expel the solution and, in so doing, the solution will try to escape in all directions including an upward direction through the constrictor 36 into the bore 18 of the handle 10. If the valve 24 is now closed the solution will be retained in the handle bore 18 by atmospheric pressure in the same way that a liquid may be retained in a straw by closing one end of the straw with one's finger.

Handle 10 is then unscrewed from the base member 12 and the solution contained in the handle may be emptied into the original bag or container 40 by simply opening the valve 24 to allow the solution to drain from the handle. From this point on the analysis of the solution may be conducted in various known ways including the use of an enzyme impregnated ticket in the field or by taking the contents in the container to a laboratory for analysis.

If an enzyme impregnated ticket is used it can be brought into contact with the insecticide solution in two ways. In a first way, if the solvent itself is an inhibitor of the enzyme, the solution from the device handle 10 may be released into the bag 40 or a dish and the highly volatile solvent allowed to evaporate. The enzyme impregnated ticket can then be brought into contact with the residue.

In a second way, if a non-inhibiting solvent is used, the solution from the device handle 10 may be released directly onto the enzyme impregnated ticket. This procedure could be enhanced by having the enzyme impregnated media serve as a filter with the entire solution being passed through this filter and into contact with the impregnated enzyme.

The device as shown in FIG. 1 can be manufactured very economically and preferably, and most practically, it is disposed of after a one time use.

I claim:

1. A device for sampling spills of chemicals comprising a tube having a cylindrically shaped bore and threads at the lower end thereof, a valve seat at the upper end of said bore, a valve engageable with said valve seat, spring means biasing said valve in the direction of said valve seat, a button for said valve to allow manual opening of said valve, a base member having a bore and threads which are engageable with said threads of said tube, and a rectangularly shaped sponge member attached to said base member, said sponge member being laterally unrestrained by said base member.

2. A device according to claim 1 wherein said tube has a constricted opening at the lower end thereof.

3

4

3. A sampling kit wherein said device of claim 1 is disposed in a sealed container, said sponge member being saturated with a solvent.

4. A sampling kit according to claim 3 wherein said solvent is highly volatile and has a selective solubility for a predetermined chemical.

5. A sampling kit according to claim 4 wherein said solvent is chloroform.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65

70

75