THE TOTAL SPACE SPRAYING SOLUTION FOR PEST MANAGEMENT DISINFECTION AND DEODORIZING PROGRAMS...

The Ultra Low Volume (ULV) technique, with its advantages of efficient use of small volumes of active ingredient, is ideal for a wide range of applications.

Unlike any other pest management application this system may be used in many other areas and thus add to the line of services offered by the pest management professional.

...A VALUABLE TOOL IN THE DEVELOPMENT OF YOUR BUSINESS
Ultra low volume technique in public health

Where it may be that ULTRA LOW VOLUME (ULV) applications are done far less frequent, since baits were introduced and target applications became the ‘norm’, there ARE still plenty of applications where ULV treatments are needed. ULV, in conjunction with targeted applications cover more ‘area’ than one or the other stand-alone treatments. Also, ULV makes sense in knocking down adult populations of flying insects that are the ‘sources’ of promoting the call to the PMP.

Considerable advances have been made in the application equipment used for insect control. Progress has been made from conventional high volume pressurized sprayers and thermal foggers to ULV dispersal systems, which use insecticides more efficiently, by breaking them down into very small particles.

The term ULV was first used in connection with locust control techniques in the 1950s and since then has been extensively employed in the application of pesticides for crop protection. The World Health Organization (WHO) has defined ULV treatments as those employing less than 5 litres/hectare, however, this definition is of limited application in the public health and stored product areas of pest management where an earlier WHO definition seems more appropriate viz: “Ultra-low volume spraying utilizes the minimum volume of insecticidal formulation required to produce the desired biological effect with maximum economy.” The principle advantages arise from the reduced droplet size, ensuring the even application of the low volume of insecticide.

One might expect that if small droplets are more efficient then the smaller the droplet the better the treatment. However, this is not the case. Research data indicate that droplets of less than 5-microns tend to be deflected around the target insect rather than hitting and impinging upon it.

The majority of droplets produced by a thermal fogger are well below this 5-micron limit. The optimum size of droplet has been demonstrated using laser holography to be around 15-microns. In addition, adding extreme heat to some of your products may significantly decrease the chemicals intended effectiveness.

The Exodus ULV System applicator produces almost all its droplets in the optimal range. ULV spraying thus provides several distinct advantages.

In the field of public health, the most commonly used unit is electrically operated, hand-held and easily portable. However, a range of models suited to different purposes is available.

Only a small fraction of particles produced by a conventional high volume sprayer fall into the optimum size range. Large droplets are wasteful, will not carry well through the air and not effectively reach the target insect. Even many ‘so called’ ULV spraying machines produce larger particles than the Exodus ULV system (on average around 80 microns). Such droplets have been shown to be less effective.

ULV applicators provide good penetration of insecticides into harborages and cracks and crevices. The droplets are carried in on air currents and insects are flushed out into contact with more insecticide.

Conventional high volume spraying may leave an unsightly deposit of insecticide and offensive odors. ULV technique leaves no visible deposit and will not stain; it is therefore ideal in situations where other insecticide application methods cannot be used. Furthermore, as it treats the whole area, insects cannot avoid encountering insecticide deposits.

The droplets produced by the Exodus ULV system fall out in approximately 1 hour and a treated area can be re-entered after this time. Be sure to follow the label instructions for the product being used. The treatment time is very short, for instance a room in an average house requires under 10 seconds application time.

ULV may be a complementary treatment to a residual insecticide and baiting program for the control of crawling insects, notable cockroaches. Pyrethrins applied as a ULV spray flush out cockroaches; irritate them so that they are less discerning as to what deposits they encounter and they thus quickly pick up a lethal dose of insecticide. This combined technique is particularly useful in areas where a residual spray will be of limited persistence, e.g. in areas that are washed down frequently and those where deposits of organic material on treated surfaces rapidly break down insecticides.

Furthermore, continued development of compounds such as deodorizers, disinfectants, mold remediation and insect growth regulators, where application rates may be very low seem to suit this type of treatment very well.
The Exodus ULV System

The Exodus ULV system has been developed with operator safety in mind, which is why we have a model with a timer included in the machine, this will reduce operator exposure to the product being used. The Exodus ULV system can be set to turn itself off after the set treatment period, without the need for the operator to be in the area being treated.

It can also be used manually. Operators should be aware of instructions as indicated on the product label and the requirements of any safety equipment (PPE) that is required.

Contained in this booklet are instructions for use, together with suggestions where ULV has been found to be effective.

Bottle attachment instructions

- Ensure that the small TYGON seal is in place on the insert tube in the nozzle head.
- Remove the cap on the 34 oz. bottle and peel off the foil seal. (Do not pierce the foil seal with the insert tube as this may cause blockages and malfunction)
- Push the bottle onto the insert tube with the flat surface against the machine.
- Pull lever up and clip into place. (see fig 1 to 4).

Use products that have ULV as an application method only.

Exodus ULV System - safe system of work

a) Survey the area to be treated and confirm that treatment is necessary.
b) Read the product label and literature and familiarize yourself with safety precautions, application rates, conditions of use etc.
c) Calculate the volume of space to be treated, using the formulas supplied below.
d) Ensure appropriate Personal Protective Equipment (PPE) is worn.
e) Areas requiring 5 minutes application time or less may be treated from one point.
f) The Exodus ULV system should be static and freestanding during discharge. There is no need to move the machine around or attempt to direct mist at particular areas.
g) Whenever possible the operator should be remote from application i.e. outside the area to be treated, but in control of the power supply to the unit.
h) The treated area should not be entered for a minimum of 1 hour.
i) After this time, ventilate the area.
Measure the space to be treated

Work out the space volume to be treated by multiplying the length, width using one of the following theories:

ULV formulations are concentrated materials. Because of the small droplet size and rapid dispersal of the spray cloud, very little is actually required.

Consider this example of a facility that is: 300 foot length by 200 foot width = 60,000 square foot:

10 Foot Theory
length x width x 10 ft (even if it’s a 30 foot ceiling) 300' x 200' = 60,000 sq. ft 60,000 x 10 (ft) = 600,000 cu ft 600 ozIf the label states 1 oz per 1000 cu ft. 300 ozIf the label states 1/2 oz per 1000 cu ft.

True Cube Theory
length x width x 30 ft (if it’s a 30 foot ceiling) 300' x 200' = 60,000 sq. ft 60,000 x 30 (ft) = 1,800,000 cu ft 1,800 ozIf the label states 1 oz per 1000 cu ft. 900 ozIf the label states 1/2 oz per 1000 cu ft.

You can also subtract the % of occupied space of the facility from the total cubic feet to reduce time and chemical.

Space treatments for Insect Growth Regulators

The Exodus has a flow rate of 1.217 oz. or 36ml. per minute. With this flow rate, you will reduce your overall application time by over 20% over traditional factory set ULV machines.

So, given a room that is 300 foot L x 200 foot W x 10 H or 60,000 cu ft., your application time at 1 oz. per 1000 cu. ft is 49 minutes vs. 60 minutes for traditional 1 oz per minute flow rate machines.

This cuts 20% off application times!

IF label requires 1 oz. per 1000 cu ft. The following comparisons can be made:-

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<th>cu. ft</th>
<th>rate o.p.m*</th>
<th>mins</th>
<th>secs</th>
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Considering today’s labor costs, the figures speak for themselves.

*o.p.m: Ounce per minute.
What are the benefits of the unique timer system?

The Exodus ULV system (model EXODUS075) are fitted with a specially developed timer system which has three advantages:

- The first is that they can be set up during the day and operate "after hours" when personnel do not have to be present, saving both time and money. The digital timers are so accurate that they can be set to treat the designated area each day for between 2 seconds and 29 minutes at a time.
- The second is that, by using the timer instead of the manual control, very accurate dosing rates can be achieved by the operators.
- The third is that operators may set up the unit wearing normal uniforms before leaving the room, thereby avoiding the need to wear full protective clothing, which may concern some customers.

Exodus ULV timer system - operating instructions

The timer controls the Treat and Wait times of the sprayer.

During a treatment sequence either the 'Wait' or the 'Treat' lights will be on.

When not in ‘Treat' section of a cycle the LED displays the time of day in a 24hr clock mode.

During the ‘Treat' part of the cycle, the display counts down and shows the ‘time left.’

There is one treatment operation per 24hour period.

The unit will control a sequence of treatments up to 9 days long or can be set for continuously repeating treatments.

The ‘Treat’ time is settable from 2 seconds to 29minutes.

The start ‘Wait’ time is settable in minutes, within 24 Hours.

When a sequence has been completed the ‘Wait’ and ‘Treat’ lights will be off and the LED display will show the time of day with a very slow flash of the ‘hrs’ and ‘mins’ lights. This indicates that the cycle has been successfully completed.

To set an operating sequence the operator initially has to enter the machine Personal Identification Number (PIN). The PIN is permanently set into the unit during manufacture. This PIN code is shown on the units master label on the underside of the machine.

Display

LED based display consists of -

- Four digits with a colon between the pairs. (0.56" Character Height)
- 3 LED's for illuminating ‘Treat’ ‘Mins’ ‘Secs’
- 3 LED’s for illuminating ‘Wait’ ‘Hrs’ ‘Mins’
- 3 Raise/Lower/OK pushbuttons
Power Supply

If the power is removed from the unit it turns off and will not restart (The initial flashing display will warn that there has been a power interruption). The design of the power supply will be such that a brief interruption of the supply or ‘Brown out’ will not cause the timer to lose its memory and reset.

Settings

There is one treatment operation per 24 hour period.

The unit controls a sequence of treatments up to 9 days long or can be set for continuously repeating treatments.

Day 1 is the day on which the setting is done and so any treatment has to be set after the actual time of day or left at zero, any earlier setting is zeroed when moving on.

In a sequence - if a day needs to be skipped then the treatment time is set to zero.

Setting procedure

Turn the Exodus ULV system On (All LED’s and digits Flash).

Enter the PIN (PIN can be found on the label on the bottom of the Exodus).

First key press turns all flashing off and only Digit-1 flashes, press up down for figure, press OK, Digit-1 stays on and Digit-2 flashes and so on - after Digit-4, if the wrong number has been entered “NO” displays alternating with the number entered for a time, and then flashes everything again. (Only the digits and colon are on during PIN setting).

If PIN is correct...

Set the time of day... ‘hrs’ and ‘mins’ lights are on.

Digit-1 flashes, press up/down for figure, press OK, Digit-1 goes on Steadily. Digit-2 flashes and so on - After digit 4, press OK, then...

Flashes 1 (for Day 1)

Press OK button to jump to Repeat Operation, otherwise...

Press either one button and ...

Set Day 1 start time (24hr clock), as for the time of day - ‘Wait’, ‘hrs’ and ‘mins’ lights are on.

Press OK button, on each digit, to confirm and move on.

Set treatment time in similar way to above - ‘Treat’, ‘mins’ and ‘secs’ lights are on.

Press OK button, on each digit, to confirm and move on.

The unit confirms by showing (Day) ‘1’, start time, (‘Wait’, ‘hrs’ and ‘mins’ lights on) and treatment time (‘Treat’, ‘mins’ and ‘secs’ lights on.), in sequence, twice then...

Flashes 2 (for Day 2)

Press OK button to end sequence or...

Press one button and the time of day used for Day 1 is repeated flashing.

Press up or down button flashing stops and setting is adjusted as above, press OK button to confirm, on each digit, and move on.

Treatment time used for Day 1 is repeated flashing.

Press up or down button flashing stops and setting is adjusted, as above, press OK button to confirm, on each digit, and move on.

The unit confirms by showing (Day) ‘2’, start time, and treatment time, in sequence.

Flashes 3 (for day 3)

Press OK button to end sequence or ...

Press one button and the time of day used for Day 2 is repeated flashing.

Press up or down button flashing stops and setting is adjusted, as above, press OK button to confirm, on each digit, and move on.

After a pause from adjustment, the unit confirms by showing (Day) ‘3’, start time, and treatment time, in sequence.

... and so on until the sequence is ended, or the last day ‘9’ is reached.
Repeat Operation

OK button have been pushed at the start of Day 1 setting.
Flashes 0
Press up or down button flashing stops and start time of day setting is
adjusted, as above, press OK button to confirm and move on.
(If the start time is before the actual time of day the unit will not treat on the same day as the setting is carried out)
Set in treatment time in similar way to above -
‘Treat’, ‘mins’ and ‘secs’ lights are on.
Press OK button to confirm and move on.
The unit confirms by showing (Day) ‘0’, start time, and treatment time in sequence.
After setting the ‘Wait’ light will come on, the time of day will be displayed and the sequence will run.
To review the remaining sequence at any time during a ‘Wait’ part of the sequence, OK button is pushed and held. The
remaining sequence is displayed in turn - to adjust any segment OK button is held when that segment is being displayed
- the unit then goes into the setting mode for that day/segment. On OK button confirmation of the segment editing then
the unit returns to normal operation. Each segment to be changed must be edited separately.

If during setting or review adjustment of wait time, the adjustment will cause a setting of over 23.99 the display resets to
20hrs
The range of areas for ULV application is huge, such as:

- Domestic, Hospitals, Prisons, Hotels, Offices, Schools, Colleges, Cinemas, Theatres, Police Stations, Factories, Libraries etc.
- Domestic and Commercial Kitchens
- Waste Sites, Incinerator Plants, Sewage Plants
- Ships' holds and cabins, cars, tractor trailers, vans, trains, buses, freight containers, ambulances, police cars, hangars, dock buildings, aircraft.
- Silos, factories, warehouses, dairies
- Zoos, kennels, catteries, aviaries, dog warden vehicles, animal sanctuaries, ASPCA premises, pet shops
- Farms, including: animal husbandry e.g.: poultry houses, pig houses, etc.

ULV Systems are...

- Economical
- Versatile
- Fast and efficient
- Low environmental impact
- For disinfection mold remediation
- For deodorization
- For insect control

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Note on the use of the Exodus: Although the Exodus can be directed, ULV applications do not normally require this. The chemical disperses on air currents into sheltered areas, which are not normally reached by conventional sprays and mists. In fact, the operator does not need to be present in the room at all but can set up the unit in a suitable place and allow it to run remotely.

Disclaimer: PestWest and affiliated companies accepts no responsibility for the use and or misuse of any of the materials put through the Exodus ULV system.