

BIOLOGICALLY HARMLESS SUBSTANCES AND APPLICATION FORMS IN CRAWLING INSECT CONTROL

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The regular and effective control of some synanthropic crawling insects as cockroaches and ants is unavoidable but due to the requirements of human health and environment protection, their elimination needs new concepts and methods.

Cockroaches, first of all the German cockroach *Blattella germanica* (L.) and the Oriental cockroach, *Blatta orientalis* L. are polyphagous species with high reproductive potential and remarkable adaptability to diverse indoor sites. They prefer hidden artificial biotopes but avoid surfaces sprayed with insecticides. However, cockroaches frequently develop resistance against these control agents.

In our novel concept of IPM technology of cockroach control new, modern tools are suggested for use in each essential element of the technology. Trapping with MEGFOG-LAK B monitoring cockroach sticky traps with natural-like food attractant represents a real pesticide-free method. In 'passive' control methods (when the crawling insect accidentally gets in contact with a control agent) general surface treatments or zone sprayings are carried out with a residual neurotoxic insecticide, favorably a microencapsulated pyrethroid. Microencapsulation can enhance the stability and also hygienic and environmental safety of a compound.

For other purposes poisoned cockroach killing baits are recommended. In our PROTECT B cockroach killing station beta-cypermethrin, a fast acting pyrethroid with negligible mammalian toxicity is used. PROTECT B cockroach killing gel used for treating sites close to the hiding places of insects, contains the same active component. The use of these formulations based on a so-called 'lure and kill' concept belongs to the 'active' cockroach control methods. Residual spot spraying (liquid attractant + insecticide) may also be a version of this up-to-date approach.

Hydroprene, an IGR type juvenile hormone analogue (juvenoid), due to its high vapour pressure, translocates and can affect cockroaches even in hiding places. Among our BIOPREN BH hydroprene containing cockroach killer products residual and total release aerosol, cold fogger or concentrate formulations for tank mixing are developed. In cases when the action of a residual insecticide (as far as possible a micro-encapsulated formulation) is completed by a flushing out effect (natural pyrethrum or synthetic pyrethroid), the increased contamination of cockroaches renders the procedure also an 'active' control method. The use of hydroprene is advantageous because its larvicidal action increases its efficacy and reduces the risk of resistance development as well.

Research and development of some other enviro-friendly formulations (e.g. slow-release dispensing techniques) are in progress.