

## ARTICLES

A SURVEY OF INSECTICIDES USED IN COUNTRY-WIDE  
MOSQUITO CONTROL IN 1955\*

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The objectives of this brief résumé of a country-wide survey on chemicals regularly employed in mosquito control and of those experimentally tested during 1955, were to assemble up-to-date information on the extent to which the newer insecticides are now used; their efficiency in pest-mosquito extermination in comparison with the older insecticides; and present trends in mosquito control agencies.

In January 1956, a questionnaire was sent to most mosquito control agencies in the United States and Canada. By March 1, 1956, replies from some 120 active mosquito control commissions in 35 states had been received. After a careful study of the reports, the information was classified as follows:

1. Principal insecticides employed for practical mosquito control.
2. New insecticides tested or used in small quantities on specific areas.
3. Mosquito resistance to DDT.
4. Future trends in mosquito control.

## RESULTS

**INSECTICIDES EMPLOYED (1 and 2).** The principal toxicants employed by most of the mosquito control districts were DDT and mosquito-oil, but substantial quantities of BHC, malathion, pyrethrum, and dieldrin were also used, particularly in areas where there was mosquito resistance to DDT. Small quantities of other new

insecticides were also applied, either experimentally or on specific areas. In some districts only one insecticide was mainly used, while in others, several toxicants, singly or combined, were applied. Data on frequency of the use of various insecticides show that *DDT*, in various formulations, was used by 91 agencies; *oil alone*, with no other toxicant added, by 31; *Pyrethrum*, either as emulsion or added to DDT-oil solution, by 23; *malathion* by 11; *BHC* by 5; *dieldrin*, as emulsion and granular dust, by 6; *Lethane or thanite*, added to DDT-oil, by 10; *chlordane* by 4; *heptachlor* by 4; *parathion* by 2; *toxaphene* by 2; *DDD* by 2; *aldrin* by 1; *Paris green* by 1; and *EPN* by 1. *Parathion* was applied by 8 districts in California where extra precautions were practiced for the prevention of possible health hazards.

**Pre-Breeding.** Thirty-one districts practiced pre-breeding treatments; 23 applied DDT and reported results of fair to excellent, with one application, applied in the early season, remaining effective for from 2 months to the better part of the summer.

**MOSQUITO RESISTANCE TO DDT AND OTHER CHLORINATED INSECTICIDES (3).** Eleven agencies reported definite resistance to DDT, either over all the county or in local areas. A number of districts substantiated previous observations that DDT is less effective on mosquito larvae during hot weather than during cool weather, and less effective on certain polluted waters.

**FUTURE TRENDS IN MOSQUITO CONTROL (4).** Reports definitely indicate greater

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emphasis on permanent control methods and less on larvicides and adulticides. This is indeed an encouraging trend. From years of experience in mosquito extermination, we have learned that the most effective and lasting results are obtained by permanent control operations, usually accomplished by proper water management. Only where permanent methods are either impossible or impractical does control resort to the use of chemicals.

Another highly desirable trend shown

by the reports is the tendency among most agencies to eliminate the use of highly poisonous chemicals and thus minimize possible hazards to the health of mosquito control operators and the public.

The writer wishes to take this opportunity to express his gratitude to all the participants in the survey and to Ted Raley, our Secretary of the A.M.C.A., for supplying the mailing list of all the U.S.A. mosquito control agencies.