EVALUATION OF GOLDEN BEAR 1111 AND CHEVRON 72-R-2569 MOSQUITO LARVICIDE OILS

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During 1972, field research was initiated to determine the effectiveness of certain larvicide oils in urban mosquito habitats in the Southeast Mosquito Abatement District. Prior to 1972, the District used FLIT MLO operationally in street gutters, catch basins, swimming pools, and other urban sites with some success, but fully satisfactory control was not obtained in some cases. Consequently, studies were performed using FLIT MLO fortified with Richfield Larvicide "A" resulting in an increase in the level of control (Pelsue & McFarland, 1973). In the summer of 1973, the studies were continued using two new larvicide oils, Golden Bear 1111 and Chevron 72-R-2569, in street gutters.

Larvicide oils used in urban mosquito control programs should have low phytotoxicity, good spreadability, and should provide rapid knockdown of mosquito larvae and pupae. They should also be non-corrosive and non-odorous. Golden Bear 1111, Chevron 72-R-2569, and FLIT MLO meet these criteria generally, but in moving water situations where rapid knockdown is important, FLIT MLO is deficient. Golden Bear 1111 appears to be a slightly more aromatic than FLIT MLO or Chevron, but Chevron has an additive to increase toxicity.

Patented petroleum oils designed for mosquito control are becoming more important because of organophosphorous insecticide resistance. For this reason, the District has done field evaluation to determine which oils are best suited for a comprehensive mosquito control program. The purpose of this study was to further evaluate new oils to determine if they would fit into a control program.

MATERIAL AND METHODS.- The study area described by Pelsue and McFarland, 1973, was used for this study. Few changes were made in the methods used in 1973; these are reported below.

The number of larval sample sites was increased from three to five, with one site as check and four test sites. Samples consisted of 3 dips per site, composited. Three larvicide oils were used in the experiments, Golden Bear 1111, Chevron 72-R-2569, and FLIT MLO (as a standard). Golden Bear was replicated five times, Chevron 72-R-2569 three times, and FLIT MLO two times. Samples were taken the day before the treatment, the day of the treatment, and the day following treatment. The samples were taken to the laboratory, counted, and identified. The dosage rate for each of the oils was 5 gallons per acre.

RESULTS AND DISCUSSIONS.–Table 1 shows the results of the tests. Golden Bear 1111 was clearly superior to Chevron and FLIT MLO. Chevron was superior to FLIT MLO. The level of control achieved with Golden Bear 1111 approaches the level required in an urban control program, and appears to be the best suited oil, possessing qualities necessary for control in moving water situations.

Table 1 shows the average numbers of larvae and pupae before and after treatment. The data do not differentiate between mortality of pre-fourth instar and fourth instar larvae, both Golden Bear 1111 and Chevron provided good control of the early instar larvae. However, in both Chevron and FLIT MLO, survival of pre-fourth instar larvae was greater than in Golden Bear 1111. Pupal mortality was good for all the oils tested.

Table 1. Average number of larvae (all stages) and pupae per dip.

Material	Pre-treatment	Post-treatment	Percent Reduction
Golden Bear 1111	87	4	95
Chevron	43	5	88
Flit MLO	22	5	77
Check[a]	37	54	

[a]Based on 9 pre- and post-treatment samples.

The mosquito species were *Culex tarsalis*, *Culex pipiens quinquefasciatus*, *Culex peus*, and *Culiseta incidens*. There appeared to be no selective toxicity to any of these species.

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References Cited

Pelsue, F. W. and G. C. McFarland. 1973. Effectiveness of a FLIT MLO - larvicide oil formulation in the field. Proc. Calif. Mosq. Control Assoc. 41:155-156.