A PROMISING NEW OIL FOR MOSQUITO CONTROL

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In Bulletin VC-1 dated September 1951, of the State of California Department of Health, entitled "Mosquito Abatement in California," it was said that "With the advent of the new organic insecticides, oil, as a larvicide, has been relegated to a place of decreasing importance. It has been further limited in that, as a result of advancements of petroleum technology, the improvement of oils for uses other than mosquito control has effected the removal of certain toxic fractions."

With that statement in mind and the knowledge that the chlorinated hydrocarbons were losing their effectiveness through the development of resistance, the challenge became clear to us at Richfield. A screening program was instituted of all finished products heretofore used in the field and of all intermediate sidestreams, tank bottoms, and other possible fractions that could be made available in commercial quantities. This screening resulted in the isolation of one very promising oil; an intermediate in one of the refining cycles.

Chromatographic analysis of this oil showed it to consist of 50% non-aromatic hydrocarbons, 46% aromatic hydrocarbons, and 4% residue. The 46% aromatics present are divided into 22% monocyclic and 24% polycyclic aromatics. Typical boiling range is from 370 deg. F. to 626 deg. F., sulfur content approximately 1.5%, and specific gravity of the oil is .89. After the laboratory screening, .5% of a suitable surface tension reducing agent was added to the product which was then taken into the field for large scale tests. In cooperation with the Orange County Mosquito Abatement District, Richfield Larvicide was applied by John Shanafelt, Jr. at a rate of two gallons per acre. This dosage resulted in a kill of 99 plus % of *Culex stigmatosoma,* larvae and pupae. On 5-acre duck ponds with more than 50% emergent weed growth averaging two feet in height, six gallons per acre were applied by air. This application resulted in a 99 plus % kill of *Culex tarsalis.*

After preliminary testing, Ted Raley of the Consolidated Mosquito Abatement District, Selma, California (in the first commercial scale application of Richfield Larvicide), used approximately 2,500 gallons of this product with reported excellent results.

Mr. C. M. Gjullin, in his test work at Corvallis, with 10% distillation cuts of Richfield Larvicide, showed no significant differences in toxicity of the ten boiling range fractions with respect to each other or the product as a whole, which confirmed our own findings. Using cuts separated into hydrocarbon types by silica gel adsorption, greatest toxicity was effected by those cuts in the dicyclic aromatic range. This has led us to believe that the inherent toxicity of the product is more closely related to hydrocarbon type rather than boiling range. Richfield Larvicide will, because of the aromatics present, fluoresce under ultra-violet light. The entrance of this oil through the siphon tube, thence the trachea, can readily be traced with a black light in a darkened room. It was possible and most interesting to note the concentration of the material in the thoracic region.

We, at Richfield, feel that the day has passed when those charged with mosquito control must use, where oil is required, the regular petroleum products ordinarily found in commerce for larval control. It is our belief that mosquito control is of such importance as to warrant the distribution of a petroleum product specifically developed for that use.