REVIEWS AND ABSTRACTS


In contrast to DDT used as a wall spray or as a larvicide for Aedes aegypti (L.), DDT used as an anopheline larvicide in dosages that are effective but reasonably safe to other aquatic life show little or no residual toxicity. Several factors may contribute to this. The two most important appear to be redistribution of the DDT due to wind and wave action, and precipitation of suspended DDT followed by adsorption of the DDT by some part of the bottom-mud complex. Adsorption is relatively slow on mud and appears to be in the organic component of the mud only, sandy soils with a minimum of organic material being rather poor adsorbents. —Author's Abstract.


The comparative residual toxicity of DDT sprayed on different materials, the effects of the spray application on different surfaces, and the effect of surface on the final residue distribution were investigated. Test panels of 17 types of surfaces including fabrics, paints, varnishes, wallpaper, whitewash, plastics, linoleum, and mud were prepared to duplicate field conditions as accurately as possible. These panels fitted into a wooden framework to form an exposure chamber in which insectary-reared adult female Anopheles quadrinaculatus mosquitoes were exposed for 60 minutes to 200 mg. DDT per sq. ft. residues. A 5 cent DDT-xylene emulsion and a pine plywood surface, adopted as comparison standards, gave the following 48 hr. mortalities: 1 month—95 per cent, 2 months—90 per cent, 3 months—80 per cent, 6 months—60 per cent. Results from other surfaces compared to the standard were: equal for fabrics and wallpaper, ½ to ¾ as good for varnish, paints, fiberboard, and plastics, less than ½ as good for whitewash, fresh paint, linoleum, and mud. Mud showed poor results even with 600 mg. DDT per sq. ft. Surface discoloration was not encountered except on over-application to blue wallpaper and dark gloss enamels. Kerosene substituted for xylene as the DDT solvent was a remedy for this discoloration. Experiments demonstrated that some DDT was lost below the surface from spray penetration on absorbent materials. Salt (NaCl) incorporated in whitewash increased the residual toxicity of subsequent DDT applications. Exposure to grease deposits lowered the toxicity of DDT residues. —R. W. Fay.

The Techniques of Application, and the Control of Roaches and Bedbugs with DDT. By Robert L. Stenburg (U. S. P. H. S., Communicable Disease Center, Technical Development Division, Savannah, Ga.). Public Health Reports. (Abstract.)

Investigations were made using DDT for the control of the German roach, Blattella germanica (Linn.), the American roach, Periplaneta americana (Linn.), and the bedbug, Cimex lectularius (Linn.). Trapping methods for sampling roach infestations were unsatisfactory and populations were divided by premise inspections into 4 classes: (A) No roaches evident; (B) 1-5 roaches per room in evidence; (C) 6-50 roaches per room in evidence; (D) Roaches too numerous to count. Combinations of DDT-xylene emulsion sprays and DDT-pyrethrum dusts were used in 5 general type treatments: (1) Over-all application with 2½ per cent DDT spray, (2) over-all application with 5- and 10 per cent DDT spray, (3) 10 per cent DDT dust to obvious resting places, (4) combined use of 5 per cent DDT spray and 10 per cent DDT dust, and (5) multiple DDT spray applications. Private homes, food stores, restaurants, hotels, and hospitals were treated and details of each type treatment are given. Methods (1), (2), and (3) gave good initial mortality but later were not entirely satisfactory. Method (4) reduced class D infestations to class A or B within 1 week and to class A within 4 weeks. Method (5) gave good results but required more work.

DDT toxicity to bedbugs was tested by applications of various solvent sprays containing 2½ to 35 per cent DDT to (1) mattress only, (2) mattress and springs only, (3) entire bedstead, (4) bedstead and adjacent walls, (5) walls and ceiling of room and all furnishings. All methods gave complete control of bedbugs during the 4 month study. —R. W. Fay.

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Previous methods of sampling such mobile insects as houseflies (Musca domestica) have been unsatisfactory. A new technique is suggested involving the use of a "fly grill" which consists of narrow strips of wood tacked together to form an open structure with a great length of exposed edges. Flies are found to rest freely on such a surface. When placed conveniently to centers of congregation the numbers of flies resting thereon were considered a fair index of the number of flies within the house fly population. —H. I. Scudder.
provide a reliable index to the relative number of flies in the congregation. An empirically justified index based on the average size of a constant number of the highest counts has been used as a guide for timing fly control activities in both individual establishments and in city-wide campaigns. It can also be adapted for use with blow flies (Calliphoridae).—W. M. Upholt.

Preliminary Studies on the Control of Blow Flies with DDT. By W. C. Baker and L. G. Schwartz (U. S. P. H. S., Communicable Disease Center, Technical Development Division, Savannah, Ga.). Public Health Rts. (Abstract.)

Preliminary tests were made with DDT for the control of blow flies (esp. Cochliomyia sp. and Lucilia sp.), at a fish market, an abattoir, a hide processing plant, and a seafood plant, using 5 per cent DDT-xylene-Triton X-100 emulsion applied at the rate of 200 and 300 mg. DDT per square foot. By means of the grill method of measuring the fluctuation in fly populations, the variation in the degree of control achieved was found to be dependent to a large extent upon the relationship between the night resting places of the flies and the extent to which such places were treated. When only the area about the daytime breeding places of the blow flies was treated, control was obtained for a 2 to 3 week period. When night resting places were treated in addition to the daytime feeding places, the control obtained was greater and lasted effectively for periods up to 3 months.—W. C. Baker.

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Quantitative sampling of the surface forms and counts of dead organisms on the water surface 24 hours after treatment were the methods used in this study. Routine applications of DDT as a dust caused little apparent damage to the surface organisms as indicated by gross observations. Paired square-foot surface samples taken before and 48 hours after treatment indicated few significant changes due to treatment. The seasonal trend of the population of surface organisms was somewhat affected by routine treatments with dust at the rate of 0.025 pound of DDT per acre, but the changes were not as great as those caused by treatments with solutions of DDT in fuel oil. DDT-fuel oil solutions killed the large surface insects such as Dytiscidae, Ceratidae, Hydrophilidae, and Corixidae at concentrations as low as 0.025 pound of DDT per acre. However, the kills resulting from applications of 0.05 or 0.025 pound of DDT per acre were proportionately much less than those resulting from applications at the rate of 0.1 pound per acre. The seasonal effects of routine DDT treatments as indicated by a comparison of the population of surface organisms in the treated and check ponds were quite marked. There was an increase in the number of Oligochaeta, Nematoda, and Copepoda, and a decrease in the Chironomidae, Hemiptera, Coleoptera, and Ephemeroptera. Insects as a group decreased in number in the treated ponds with the largest decrease occurring among the Chironomidae. The net results of these changes are difficult to evaluate, but it appears that there is some reduction in the available supply of fish food. Reductions noted to date, however, have not been sufficient to affect the breeding stock; and since treatment is in localized areas, it is probably not sufficient to limit seriously the fish population by restriction of the food supply.—Author’s Abstract.


Dr. I. M. Mackerras presents some of the data accumulated during and since the war concerning the Australasian malaria vectors. Studies on the “vector qualities” were carried out in so far as possible, an attempt being made to judge susceptibility to infection, abundance, association with man, avidity for human blood, and longevity.

Since all Australasian species were found to be apparently highly susceptible to malaria infection, that criterion is not a limiting one. Abundance, although a basic vector quality, must be weighed with the other factors because some species are very abundant yet not important transmitters, e.g., Anopheles bancrofti at Cairns and A. longirostris in parts of New Guinea. None of the Australasian anophelines are “domesticated” but A. punctulatus punctulatus and A. p. farauti show a tendency to concentrate near native villages in New Guinea, a habit not shown by other anopheline species, either there or on the mainland of Australia.

Avidity for human blood, based on precipitin tests, has been hard to evaluate because a true picture is not presented if specimens are collected from native huts, an unnatural resting place for Australasian species. Collections of recently engorged specimens from their natural resting places were desirable and significant, but often difficult to obtain. In evaluating the evidence, however, Dr. Mackerras concludes that A. punctulatus punctulatus, at least in the Milne Bay population, is strongly anthropophilic, A. p. farauti associates with man and his domestic animals but has no particular feeding preferences between them and, a few species strongly prefer other animals.

Nothing is known of survival rates and duration of life of Australasian anophelines in nature, so the author obtained longevity data from laboratory colonies maintained at Cairns. The percentage of 4 species studied surviving to 17 days...