The Use of Chlorinated Polyphenyls to Increase the Effective Insecticidal Life of Lindane[1]

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The tests described in this paper were designed to investigate the possibilities of extending the effective life of lindane by the addition of a chlorinated polyphenyl to the spray solution. Other research workers, in preliminary studies with cockroaches and house flies, have reported some evidence that there was a marked increase in the effective life of lindane when such material was added to the toxicant formulation (Hornstein & Sullivan 1955, Sullivan *et al.* 1955). From their tests they concluded that the effective life of lindane may be increased 10 to 20 times. Therefore, the author attempted to confirm their results under field conditions with an insect of economic importance to the shade tree field.

The materials selected for testing were 25% lindane wettable powder and Aroclor No. 5460, a chlorinated polyphenyl produced exclusively by the Monsanto Chemical Company (Benignus, n. d.). The insect used was the elm leaf beetle, *Galerucella xanthomelaena* (Schr.).

The resinous Aroclor, which is insoluble in water, was dis-

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residues of different ages on aluminum and masonite surfaces.

Dosage (Mg./Sq. Ft.)		Aluminum Surface					Masonite Surface				
		Days					Days				
Lindane	Chlorinated Polyphenyl	2	10	30	60	90	2	10	30	60	90
50	0	100	37	9	4	6	72	0	0	4	0
100	0	100	100	36	8	0	100	19	0	8	0
200	0	100	100	78	22	0	100	78	6	6	0
50	200	86	80	78	80	66	91	8	0	6	0
100	200	94	67	76	82	80	100	17	12	2	4
200	200	98	100	63	66	99	100	30	0	8	0
200	400	95	—	79	96	95	—	—	—	—	—
0	200	0	0	0	0	0	—	—	—	—	—

phenyl per square foot. Residues from 100 mg. of lindane plus 200 mg. of chlorinated polyphenyl per square foot increased the kill to 80 per cent, and residues from 200 mg. of lindane plus 200 mg. of chlorinated polyphenyl increased the kill to 99 per cent. The residues remained transparent, tenacious, and only very slightly tacky. Both lindane and lindane-chlorinated-polyphenyl residues were much less effective on the porous masonite surfaces. Residues of the chlorinated polyphenyl alone on aluminum surfaces caused no mortality.

Discussion.—These tests showed that the persistence of lindane as a residue was greatly improved by incorporation into a film of chlorinated polyphenyl. The lindane in the main body of the film remained in solution and acted as a reservoir. As the lindane evaporated from the surface it was continually renewed by a study diffusion of lindane to this surface. Because the lindane remained in solution, there was no white powdery deposit, which often mars treated surfaces.

The excellent spreading properties of the solutions and the inertness and tenacity of the films suggest further uses in the field of entomology, and they are being investigated.

Literature Cited

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