

THE EFFECT OF WEATHERING ON PERSISTENCE OF INSECTICIDE RESIDUES ON GLASS SURFACES

Persistence of insecticide residues is influenced by nature of surface and climatic features. Influence of temperature, relative humidity and sunshine has been reported by many workers (Burgess and Sweetman, 1949; Gainus and Mistic, 1952; and Srivastava *et al.* 1969. Petty (1948) has recorded persistence of DDT residues on distemper and glass surface even after 10 months. New informations gathered on persistence of residues of some insecticides on glass surface when exposed to sunlight are presented in this note.

Films of the insecticide deposit were laid on the inside surface of petridishes and exposed to bright sunlight for varying periods. The residues were determined in terms of the mortality response of two weeks-old unsexed adults of *Tribolium castaneum* Herbst confined on the residue for 24 hours. The deposit was prepared by spreading 1 ml of the insecticide solution within a petridish and permitting it to evaporate while being rotated. One set of deposits was closed by the petridish covers and the other set left open and both were exposed to bright sunlight. Persistence assessments were made at 1, 2, 4, 8, 16 and 32 days after preparing the deposits. Each treatment was replicated thrice.

Results presented in Table 1 show that in general the loss of residues from the glass surface took place at a much more rapid rate under the exposed condition than under the enclosed condition except in DDT and carbaryl. The periods up to which residues remained active under the closed and open conditions were respectively 16 and two days in lindane beyond 32 and eight days in endrin, 32 and four days in parathion, beyond 32 days and two days in endosulfan and 16 days and four days in trichlorfon. In malathion though residues persisted beyond 32 days under both conditions the residues were substantial (96.67% mortality) on the 32nd day under the enclosed condition than under open condition (23.3% mortality). In fenitrothion there was no reduction in the toxicity of the residues up to eight days under the enclosed condition while there was 66.7% reduction of toxicity under the open conditions. In the case of carbaryl and DDT the difference in the loss of toxicity of the residues under the two environments is the least.

Comparing persistence of the different insecticides under the exposed condition it is seen that the least persistent are lindane and endosulfan (persisting for 2 days) and the most persistent are malathion, DDT, Carbaryl, and fenitrothion persisting for up to 32 days while the others occupy intermediate persistence of four to eight days.

° Part of the Thesis submitted by the first author to the Kerala Agri. University for the award of the M. Sc. (Ag.) degree

TABLE 1

Percentage mortality of *Tribolium castaneum* adults confined on insecticidal films deposited in petridishes and and exposed in petridishes exposed to sunlight for varying periods under enclosed and open conditions.

Insecticide and concentration (% a/i)	Condition	% mortality in 24 hours after exposure periods (days)					
		1	2	4	8	16	32
DDT 0.2	Closed	80.00	74.34	76.70	50.00	40.00	36.67
	Open	80.00	73.33	80.00	50.00	26.66	23.33
Lindane 0.03	Closed	100.00	70.00	63.34	33.34	10.00	0.00
	Open	100.00	60.00	0.00	0.00	0.00	0.00
Endrin 0.03	Closed	100.00	83.34	83.34	76.67	73.34	70.00
	Open	100.00	70.00	50.00	43.33	0.00	0.00
Parathion 0.03	Closed	100.00	100.00	100.00	100.00	10.00	3.34
	Open	100.00	83.33	83.00	0.00	0.00	0.00
Malathion 0.1	Closed	100.00	100.00	100.00	83.34	90.00	96.67
	Open	100.00	100.00	96.66	73.33	46.66	23.33
Fenitrothion 0.03	Closed	100.00	100.00	100.00	100.00	3.34	0.00
	Open	100.00	76.60	73.33	66.66	3.33	3.33
Carbaryl 0.2	Closed	53.34	43.34	33.34	33.34	30.00	13.34
	Open	53.33	43.33	36.66	20.00	10.00	10.00
Endosulfan 0.03	Closed	46.67	33.45	20.00	13.34	16.67	16.67
	Open	48.33	30.00	0.00	0.00	0.00	0.00
Trichlorfon 0.05	Closed	100.00	100.00	100.00	100.00	100.00	0.00
	Open	100.00	90.00	80.00	0.00	0.00	0.00

സംഗ്രഹം

കീടനാശിനികളുടെ പ്രയോഗാനന്തര അവശിഷ്ടങ്ങളുടെ നിലനിൽപ്പിനെ സൂര്യ പ്രകാശം എങ്ങനെ ബാധിക്കുന്നു എന്ന് പരിശോധിക്കുവാൻ ഈ അവശിഷ്ടങ്ങൾ ഗ്ലാസ്സീൻറെ പ്രതലത്തിൽ നിക്ഷേപിച്ച് ഒരു ഗ്ലാസ്സ് പാത്രംകൊണ്ട് അടച്ചു അല്ലാതെയും തുടർച്ചയായി സൂര്യപ്രകാശം ഏൽപ്പിച്ചു. തുറന്നുവെച്ചിരുന്ന അവശിഷ്ട നിക്ഷേപങ്ങൾക്ക് അടച്ചുവെച്ചിരുന്നവയേക്കാൾ വേഗത്തിൽ ക്ഷയം സംഭവിച്ചത്.

വാവിധ കീടനാശിനികളിൽ അവശിഷ്ട നിക്ഷേപം അതിവേഗം ക്ഷയിച്ചത് ലിൻഡേനും എൻഡോസൾഫാനുമാണ്. മാലത്തയോൺ, ഡി. ഡി. റി. കാർബാറിൽ, ഫെനിക്സോത്തയോൺ എന്നിവയുടെ അവശിഷ്ടങ്ങൾക്ക് വളരെ സാവധാനത്തിലെ ക്ഷയം സംഭവിച്ചുള്ളൂ.

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College of Agriculture,
Vellayani 695522
Trivandrum.

GEORGE KOSHY
N. M. DAS
M. R. G. K. NAIR.

(M S Received 25-1-1980)