

US EPA ARCHIVE DOCUMENT

9-27-79

DATA EVALUATION RECORD

1. CHEMICAL: See Table 1
2. FORMULATION: See Table 1.
3. CITATION. Johansen, C.A. (1972) Toxicity of Field-Weathered Insecticide Residues to Four Kinds of Bees. Environmental Entomology 1 (3): 393-394. Fiche ID 05000837.
4. REVIEWED BY: R.M. Lee
Entomologist
Ecological Effects Branch/Hazard Evaluation Division
5. DATE REVIEWED: 9/27/79
6. TEST TYPE: Bee residue toxicity test
 - A. Test Species:
 - 1) honey bee: Apis mellifera L.
 - 2) alkali bee: Nomia melanderi Cockerell
 - 3) leafcutter bee: Megachile rotundata (F.)
 - 4) bumble bee: Bombus centralis Cresson
B. rufocinctus Cresson.

7. REPORTED RESULTS

The test results (as shown in Table 1) indicate that Temephos, Tetradifon, Phosalone and Isopropyl parathion were the least toxic against all the bee species tested. Imidan and Malathion were extremely toxic against both the honey bee and the alfalfa leafcutter bee. Endosulfan also produced 100% mortality in the alkali bees.

8. REVIEWER'S CONCLUSION: The study is scientifically sound. See table 1 for percent mortality data. However determinations of 24-h acute contact LC₅₀ and residual LD₅₀ are required for accurate assessment of bee hazard, although guidelines for regulatory requirement is not established at present.

SEE TEMEPHOS FILE
FOR COMPLETE
DATA EVALUATION
RECORD

Table 1.-Effect of insecticide residues on alfalfa to alfalfa leafcutter bees (LB). alkali bees (AB), and honey bees (HB).

| Insecticide | Lb/acre | Age of residues | 24-hr % mortality | | |
|-----------------------------|---------|-----------------|-------------------|-----|-----|
| | | | LB | AB | HB |
| Biothion 4 lb EC | 0.5 | 3 hr | 21 | 12 | 9 |
| Carbaryl 80% WP | 1.0 | 2 days | 85 | 78 | 69 |
| Carbophenothion 4 lb FP | 1.5 | 3 hr | 89 | 33 | 6 |
| Demeton 2 lb EC | .5 | 6 hr | 26 | 19 | 1 |
| DDT 1 lb EC | 1.5 | | | | |
| + toxaphene 2 lb EC | 3.0 | 3 hr | 94 | 68 | 55 |
| Dicofol 4 lb EC | 1.0 | 3 hr | 2 | 7 | 8 |
| Dicrotophos 9 lb EC | .5 | 2 days | 40 | 29 | 7 |
| Dimethoate 2.67 lb EC | .5 | 2 days | 45 | 30 | 4 |
| Endosulfan 2 lb EC | 1.0 | 3 hr | 71 | 100 | 11 |
| Gardona 2 lb EC | 1.0 | 3 hr | 70 | 26 | 4 |
| Galecron 95% SP | 1.0 | 3 hr | 0 | 0 | 0 |
| Imidan 50% WP | 1.0 | 3 hr | 100 | 63 | 98 |
| Isopropyl parathion 3 lb EC | 1.0 | 10 hr | 8 | 0 | 0 |
| Malathion 5 lb EC | 1.0 | 6 hr | 100 | 47 | 100 |
| Methomyl 90% wP | 1.0 | 1 day | 65 | 40 | 1 |
| Methyl parathion 4 lb EC | .5 | 10 hr | 71 | 48 | 89 |
| Naled 8 lb EC | .5 | 3 hr | 100 | 30 | 21 |
| Omite 6 lb EC | 1.5 | 3 hr | 18 | 12 | 1 |
| Parathion 4 lb EC | .5 | 10 hr | 50 | 66 | 41 |
| Phosalone 3 lb EC | 1.5 | 3 hr | 14 | 13 | 0. |
| Phosphamidon 8 lb EC | .5 | 2 days | 30 | 23 | 10 |
| Phosvel 3 lb EC | 1.0 | 3 hr | 100 | 63 | 3 |
| Schradan 90% IS | 1.0 | 3 hr | 89 | 6 | 0 |
| Tetradifon 1 lb EC | .75 | 3 hr | 20 | 5 | 0 |
| Trichlorfon 50% SP | 1.0 | 3 hr | 5 | 31 | 17 |