

## Poultry Tolerance to Excessive Amounts of Co-Ral Dust<sup>1</sup>

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The effectiveness of Co-ral® (0,0-diethyl 0-3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl phosphorothioate) against certain poultry insects has been demonstrated by Hoffman (1956), Kraemer (1959), Knapp & Krause (1960), and others. The present study deals with the effects of overdoses to poultry.

PROCEDURE.—These studies were initiated in March 1960. Three pens, each containing 15 New Hampshire Red laying hens, were used. Each pen received one of the following treatments for 4 weeks: Co-ral 0.5% dust, daily; 0.5% dust, 3 times a week, (Tuesday, Thursday, and Saturday) and 0.5% dust, weekly. All applications were made by one man with a polyethylene squeeze bottle. Each hen received one puff under each wing, one around the vent, and one around the preening gland. Total dosage for each hen per treatment was 0.02 gram of active Co-ral.

Table 1.—Effects on hens of 0.5% Co-ral dust applied at different intervals.

TREATMENT	DAILY	THREE TIMES/ WEEK	ONCE-A- WEEK
Active grams Co-ral/bird/ treatment	0.02	0.02	0.02
Average eggs/bird for 26 days	10.7	7	10.5
Feed consumed, lb./bird for 30 days	14	13	12
Initial weight in lb. average/bird	5.6	5.7	5.7
Final weight in lb. average/bird	6.2	6.2	6.3
Average gain in lb.	0.6	0.5	0.6

Table 2.—Residue found in samples of meat and giblets taken from hens, 5 and 12 days after treatment with 0.02 gram of active Co-ral dust per day for 4 weeks.<sup>a</sup>

DAYS FOLLOWING FINAL APPLICATION	NO. HENS SAMPLED	NET RESIDUE, (P.P.M.)
<i>Meat</i>		
5	3	n.d. <sup>b</sup>
5	2	0.02
5	1	0.04
12	5	n.d.
12	1	0.08
Untreated	4	0.01 <sup>c</sup>
<i>Giblets</i>		
5	6	n.d.
12	6	n.d.
Untreated	4	0.01 <sup>d</sup>

<sup>a</sup> For analytical method, see Agric. Food Chem. 7(4): 256.

<sup>b</sup> Nondetectable.

<sup>c</sup> Average of 4 samples. One sample showed 0.02 p.p.m., therefore, all samples with less than 0.02 p.p.m. are considered nondetectable.

<sup>d</sup> All residues less than 0.01 p.p.m. for giblets are considered nondetectable.

Six eggs were collected from each treatment and control group on regular days, twice weekly. The eggs were washed, broken into plastic containers, mixed, and frozen immediately for subsequent analyses. Six hens receiving daily treatments and six untreated hens were sacrificed at the end of 1 week following treatment and another six hens the second week following treatment. They were plucked and eviscerated by a commercial firm and frozen immediately. All edible parts were saved for subsequent analyses by the Chemagro Corporation, Kansas City, Missouri. Eggs were also collected twice a week from these hens until they were sacrificed.

The hens had been wintered in an open house under an extremely cold environment. They were moved to a closed house 3 days prior to this experiment and thus were under the influence of a better environment, which would result in an increase in weight. Not enough hens were available from the open house to serve as controls, so another house of untreated hens was used for this purpose, also for the control eggs and tissue samples for residue analyses.

RESULTS AND DISCUSSION.—Neither the poultry husbandryman nor the investigator could notice any toxic or unusual symptoms in the treated hens. Table 1 shows practically no difference in egg production between seven treatments per week, and once-a-week treatments (10.7 vs. 10.5 eggs per hen), although treatment three times a week resulted in only seven eggs per hen during the 21 days. This difference in egg production was probably because of differences in egg-laying capacity of individual hens and the surrounding environment. At most, only small differences occurred in feed consumption, and gains in weight, among the three groups.

Table 2 shows the results of residue analyses of meat and giblet samples. Two of the six treated hens sampled 5 days after the last application showed a 0.02 p.p.m. of Co-ral while one hen had a 0.04 p.p.m. Twelve days after the last application, only one of six hens contained Co-ral residue (0.08 p.p.m.). No Co-ral residue was detected in any of the giblets.

Analyses of eggs collected throughout the 4-week period and 12 days following last application showed no detectable Co-ral residue.

### REFERENCES CITED

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- Kraemer, P. 1959. Relative efficacy of several materials for control of poultry ectoparasites. Jour. Econ. Ent. 52(6): 1195-9.

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