

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD
§ 71-2(A) -- PASSERINE BIRD DIETARY LC₅₀ TEST

1. **CHEMICAL:** AC 303,630

PC Code No.: 444-526-13

2. **TEST MATERIAL:** AC 303,630; Lot # AC 7504-59A, CAS No. 122453-73-0, EBA, Inc., ID No. 006. Off-white powder with a halide odor.

Purity: 94.9%

3. **CITATION**

Authors: J. A. Gagne, R. R. Troup, L. W. Brewer, and J. P. Sullivan.

Title: 8-Day Acute Dietary Test with AC 303, 630 Technical in Red-Winged Blackbirds (*Agelaius phoeniceus*).

Study Completion Date: 16 December 1997

Laboratory: Ecotoxicology and Biosystems Associates, Inc., Sisters, OR

Sponsor: American Cyanamid Company, Princeton, NJ

Laboratory Report ID: ECO 96-152; EBA 019603

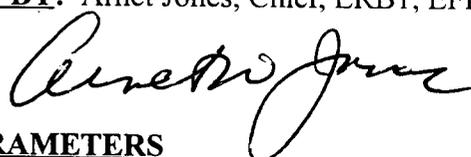
MRID No.:

4. **REVIEWED BY:** Regina Hirsch, Wildlife Ecologist, ERB1, EFED

Signature: 

Date: 1/16/98

5. **APPROVED BY:** Arnet Jones, Chief, ERB1, EFED

Signature: 

Date: 09/22/98

Sec'd by Arnet Jones

6. **STUDY PARAMETERS**

Age of Test Organisms at Test Initiation: Adult males

Definitive Study Duration: 8 days

7. **CONCLUSIONS:**

Results Synopsis

LC₅₀: 10.75 ppm ai

NOEL: 6.93 ppm ai

95% C.I.: 9.18-12.36 ppm ai

Probit Slope: 9.18

8. **ADEQUACY OF THE STUDY**

A. **Classification:** Core.

B. **Rationale:** N/A

C. Repairability: N/A

9. GUIDELINE DEVIATIONS

1. Birds were not disease free at test initiation. In one aviary prior to testing 3 birds died of Salmonella poisoning. In addition, a low level of avian pox was found in the test birds.

10. SUBMISSION PURPOSE: Registration application and tolerance petition for Chlorfenapyr on Cotton.

11. MATERIALS AND METHODS

A. Test Organisms

Guideline Criteria	Reported Information
Species: An upland game bird species, preferably the bobwhite (<i>Colinus virginianus</i>).	Red-winged Blackbird (<i>Agelaius phoeniceus</i>)
Age at beginning of test: 10-14 days old.	Adult males, approaching their first breeding period or older
Supplier	Wild caught in Harney County, Oregon
Chicks appeared healthy and did not have excessive mortality before the test?	In one aviary prior to testing 3 birds died of Salmonella poisoning. In addition, a low level of avian pox was found in the test birds.
Acclimation period: As long as possible.	4 weeks

B. Test System

Guideline Criteria	Reported Information
Pen size: about 35 x 100 x 24 cm	Test groups and controls were housed in group outdoor aviaries measuring 1.83 m (6 ft) by 2.44 m (8 ft) by 1.83 m (6 ft).

Guideline Criteria	Reported Information
Room temperature: 22-27°C (71-81°F)	Average maximum daily temperature was 81.2° F (SD _{n-1} = 5.5 °); Average minimum daily temperature was 42.4° F (SD _{n-1} = 5.4 °)
Relative humidity: 30-80%	Average maximum daily humidity was 86.3% (SD _{n-1} = 6.6%); Average minimum daily humidity was 46.5% (SD _{n-1} = 9.6%)
Adequate ventilation?	Yes
Photoperiod Minimum of 14 h of light.	Natural daylight during the months of June and July
Diet: A commercial diet for game birds.	50% sunflower chips and 50% brown rice

C. Test Design

Guideline Criteria	Reported Information
Range finding test?	Yes, 5 treatment groups and 1 control group of five adult males each were tested . The treatment levels were 3, 7, 14, 34, and 77 ppm AC 303,630. Mortality in the treatment groups was 1, 4, 5, and 5 for the 3, 7, 14, 34, and 77 ppm groups, respectively.
<u>Definitive Test</u> Nominal concentrations: Four minimum, 5 or 6 strongly recommended, in a geometric scale, unless LC ₅₀ > 5000 ppm.	Control, 5, 7, 10, 14, and 19.5 ppm. In addition, 7 males were used in a satellite study where birds were exposed to 14 ppm of treated feed for only 3 days instead of 5 to determine if the length of exposure influenced the effects to the birds.
Controls: Control group tested with diet containing the maximum amount of vehicle used in treated diets?	Yes

Guideline Criteria	Reported Information
Number of birds per group: 10 (strongly recommended)	10 adult males. In addition, 7 males were used in a satellite study where birds were exposed to 14 ppm of treated feed for only 3 days instead of 5 to determine if the length of exposure influenced the effects to the birds.
Vehicle: Distilled water, corn oil, propylene glycol, 1% carboxymethylcellulose, or gum arabic.	Acetone was used as the diluent/vehicle. The controls received 50 ml of untreated acetone and were treated identically as the test treatments.
Vehicle amount (% of diet by weight): Not more than 2%	50 ml
Test durations: 5 days with treated feed and at least 3 days observation with "clean" feed.	5 days with treated feed and 3 days of observation with clean feed. The satellite study had 3 days of treated feed and 3 days observation with clean feed.
No mortality during last 72 hr of observations?	No

12. REPORTED RESULTS

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Body weights measured at beginning and end of study?	Yes, individual body weights were taken at the initiation of acclimation and on days 1, 5, and 8 of the definitive test.
Estimated consumption per pen reported for pretreatment, treatment, and observation periods?	Yes, feed consumption was measured daily by cage. Feed spill pans were maintained under each feed tray to catch spill. Spill feed was placed back into the feed tray before the feed was weighed each day to facilitate a more accurate daily assessment of food consumed.

Guideline Criteria	Reported Information
Control Mortality: Not more than 10%	10%
Raw data included?	No
Signs of toxicity (if any) were described?	Yes

Mortality

Conc. (ppm)		No. of Birds	Cumulative Number of Dead							
Nominal	Mean Measured		Day of Study							
			1	2	3	4	5	6	7	8
Control	--	10	0	0	0	0	1	1	1	1
5	4.47	10	0	0	0	0	0	0	0	0
7	6.93	10	0	0	0	0	0	0	0	0
10	9.78	10	0	2	5	5	5	5	5	5
14	13.6	10	0	2	7	7	7	7	7	7
19.5	17.0	10	1	5	9	10	10	10	10	10

Other Significant Results:

Birds found dead in aviaries in the treatment groups were all found on the aviary floor in a state of tetanus-like full-body rigidity characterized by legs and neck fully extended with back, neck, and head arched sharply backward. Some birds were found still warm, and even these were rigid and had the tetanus-like posture. The single bird that died in the control group, upon post-mortem examination was found to be emaciated and had excessive fluid in its intestines. These are symptoms of *Salmonella* poisoning. Other post-mortem examinations all other birds that died during the test and up to 4 birds from the treatment and control groups were sacrificed at the end of the study. Gross pathological findings indicate that many of the birds had pox marks from avian pox either on their feet, legs, and/or base of their beak. However, the researchers felt that the pox infection was at a low level and was not producing negative health impacts. It was also noteworthy that many of the treatment group birds that survived to day 8 had normal or excessive fat deposits indicating the birds continued to consume the treated feed and assimilate it at normal rates, as shown in the feed consumption data.

There were no significant differences in the mean percent change in body weights between the control and treatment groups at days 0, 5, or 8. In addition, there were no obvious

effects on food consumption.

The satellite test, using 7 birds and exposing them to 14 ppm for 3 days and 3 days post-observation, all 7 birds survived. The researchers believe that there does not appear to be a compound-related explanation for the difference in timing of the mortality between the "standard" 14 ppm group receiving treated diet for 5 days and the satellite group receiving treated diet for only three days. In the standard group all 7 deaths has occurred by the end of the third day of the test. This indicates it is possible for male red-winged blackbirds to become sufficiently intoxicated during the time the satellite group was exposed to treated diet. The reason mortality occurred in the standard group during the first 3 days and not in the satellite group is unknown.

Statistical Results:

Statistical Method: Probit Analysis

LC₅₀: 11.3 ppm 95% C.I.: 9.42 - 13.1 ppm

NOEL: 7 ppm Probit Slope: 8.3

13. Verification of Statistical Results

Statistical Method: Probit Analysis using the mean measured concentrations

LC₅₀: 10.75 ppm 95% C.I.: 9.18-12.36 ppm

NOEL: 6.93 ppm Probit Slope: 9.18

14. REVIEWER'S COMMENTS:

This study is considered to be scientifically sound. Although, some of the birds were infected with avian pox during the study, it is thought that this may contribute to a more conservative estimation of toxicity.