

COMPLETED PROJECT REPORT

Project Title: Norway Rat Laboratory feeding study.

Research Agency: National Wildlife Research Center

Principal Investigator: G. Matschke

Budget: \$22,682.00

Summary:

April 1998

Study Protocol QA 444 was prepared by the Study Director and approved by the Director, NWRC. The study is designed to furnish efficacy data required by the EPA for the registration of 0.005% chlorophacinone grain bait (EPA SLN No. CA-890023). Five pounds of control bait were purchased and analyzed by the ACP. White rats were purchased from Simonsen Laboratories, and the study was conducted in Dec. 1995. Most rats refused to eat the 0.005% chlorophacinone grain bait and consequently only 15 of 40 white rats died. A small study was conducted in January 1996 with the adhesive and dye alone; food consumption decreased daily over a 4-day feeding period. However, the total food consumption was much greater than was observed in Dec. 1995, indicating that the chlorophacinone and the corn starch may both reduce acceptance. A third test was run in Feb. 1996 to determine if chlorophacinone alone was the major cause of rats reduced consumption. This part of the study is completed. A report is being written by the Study Director.

The second part of this study is designed to furnish efficacy data required by the EPA for the registration of 0.005% diphacinone grain bait (EPA SLN No. CA-890020). White rats were purchased from Simonsen Laboratories, Gilroy, Calif. A 5 lb sample of the 0.005% diphacinone grain bait was prepared by Rodent Control Outfitters (RCO) and shipped the last week of June 1996. The sample was assayed by the ACP for concentration verification. The quantity of bait required for the study was subsequently purchased from RCO. The rats were consuming between 0.68 g and 1.11 g of bait on day 1 on average. On day 2 they consumed less than 1 g of bait. Poor bait acceptance is being investigated currently with plain oats and dyed oats. The data have been entered into the computer database for statistical analysis and are being prepared for the final report.

August 1998: The statistical analyses and final report are in progress.

November 1999: The final report has been submitted to CDFA. An abstract follows: The EPA has required efficacy data as partial fulfillment of data required for reregistering CDFA's 0.005% diphacinone and chlorophacinone oat groat baits. To meet these requirements a laboratory study was conducted to determine the efficacy of both baits for controlling Norway rats. For each bait, 60 white rats (20 control, 40 treated), equally represented by sex were placed on a 15-day, 2-

choice feeding trial. White rats were housed individually for testing. Control white rats (Group I) received 2 dishes, both containing the Office of Pesticide Programs (OPP) rat and mouse challenge diet. Each of the treated rats (Groups II and III) received 1 dish of the OPP diet and 1 dish containing either the chlorophacinone or diphacinone bait.

For the chlorophacinone group, 15 (37.5%) of the 40 treated rats died. Mortality began on day 5 and continued through day 18. On day 1 the total toxic bait intake of the 40 rats was 24.79 g, and averaged 0.62 g/rat. After day 1 overall toxic bait consumption declined to an average of 0.25 g/rat/day. For the 15 rats that died the mean intake was 0.88 mg/kg and ranged from 0.48 - 1.42 mg/kg. The 25 surviving rats had a mean intake of 0.61 mg/kg and ranged from 0.4 - 3.58 mg/kg.

For the diphacinone group, 16 (40.0%) of the 40 treated rats died. Mortality began on day 6 and continued through day 18. On day 1 the total toxic bait intake of the 40 rats was 34.33 g, and averaged 0.86 g/rat. After day 1 overall toxic bait consumption declined to day 4 when overall consumption rose slightly because Group II males ate almost as much as day 1. Consumption declined after days 5 and 6 when the males began to die. For the 16 rats that died the intake ranged from 1.01 - 4.99 mg/kg. The 24 surviving rats had an intake that ranged from 0.6 - 2.01 mg/kg.

The 37.5% mortality for chlorophacinone and the 40% mortality for diphacinone do not meet the 70% minimum established by EPA for rodenticides. Reasons for the poor bait acceptance are discussed.

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