

## COMPLETED PROJECT REPORT

**Project Title:** Norway rat lab feeding study.

**Research Agency:** National Wildlife Research Center

**Principal Investigator:** Matschke

**Budget:** \$22,478.00

### **Background:**

April 1998: Study Protocol QA 517 was canceled and the study was combined with the QA 506 Study Protocol. ACP developed a method to analyze chlorophacinone in wax bait. However, the manufactured baits contained only half of the 0.005% target concentration. The low concentration problem may have been due to the manufacturer not accounting for the wax added to the grain and the chlorophacinone in the wax bait block. NWRC prepared a 0.01% bait using the original formulation and added the wax, resulting in the needed 0.005% concentration in the completed wax bait block. NWRC used an environmental chamber to acclimate the 0.005% wax blocks at 90% to 100% humidity at 100 degrees F for 15 days.

ACP also developed a method to analyze diphacinone in wax bait, but encountered the same problem as noted for chlorophacinone above. The same solution as noted above was employed for the diphacinone wax block.

### **Summary:**

December 1999: The final report was submitted to CDFA. An abstract of the report is given below:

The EPA has required efficacy data as partial fulfillment for reregistering CDFA's 0.005% diphacinone and chlorophacinone wax bait blocks. To meet these requirements a lab study was conducted to determine the efficacy of each toxicant for controlling Norway rats (*Rattus norvegicus*). For each toxicant, 60 white rats (20 control, 40 treated), equally represented by sex, were placed on a 15-day, 2-choice feeding trial. Rats were housed individually for testing. Control rats (Group I) received 2 dishes, both containing the Office of Pesticide Programs (OOP) rat and mouse challenge diet. Each of the treated rats (Groups II and III) received one dish of the OOP diet and a second dish with either a 0.005% diphacinone or chlorophacinone wax bait block. Group II had unweathered bait blocks and Group III had weathered bait blocks.

For the diphacinone test, 24 (60.0%) of the 40 treated rats died. Mortality began on day 5 and continued through day 17. On day 1, the total toxic bait intake of the 40 rats was 22.67 g or 0.57

g/rat. On day 2 total bait consumption was only 8.4 g and on days 3 to 15 total consumption never exceeded 5.0 g/day. Bait acceptance and mortality was greater among the rats in Group III feeding on the weathered bait blocks. Low bait consumption corresponded to low mg/kg intake. For the 23 rats that died, their mean (SD) mg/kg intake was 0.65 mg/kg (0.24), ranging from 0.26 - 1.24 mg/kg. The 17 surviving rats had a mean (SD) intake of 0.24 mg/kg (0.15), ranging from 0.07 - 0.45 mg/kg. The 60% mortality does not meet the 70% minimum standard established by the EPA.

For the chlorphacinone test animals, mortality began on day 4 and continued through day 18. Thirty-two (80%) of the 40 treated rats died. Only 14 (70%) of 20 rats (Group II) died after feeding on the unweathered bait blocks and 18 (90%) of 20 rats (Group III) died after feeding on the weathered bait blocks. On day 1, the total toxic bait consumption of unweathered bait blocks for Group II was 9.09 g or 0.45 g/rat. This compares to 38.85 g or 1.94 g/rat consumed by the 20 rats in Group III. Total toxic bait consumption for Groups II and III was 27.72 g and 91.08 g, respectively. Females in Groups II and III consumed more toxic bait than the males, 67.2 g (females) vs. 51.54 g (males). For the 32 rats that died, their mean (SD) mg/kg intake was 0.75 mg/kg (0.75), ranging from 0.11 - 3.78 mg/kg. The 8 surviving rats had a mean (SD) intake of 0.29 mg/kg (0.26), ranging from 0.09 - 0.52 mg/kg. The 80% mortality exceeds the 70% minimum standard set by EPA for rodenticide efficacy.

Reasons for the greater bait acceptance of the weathered wax bait blocks are discussed.

**Last Updated:**

02/13/09

