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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

TO: Frank Sanders, Section Head
Insecticide-Rodenticide Branch
Registration Division (TS-767)

THRU: R. Bruce Jaeger, Section Head
Review Section #1
Toxicology Branch/HED (TS-769)

SUBJECT: Review of study with EPA Reg. No. 264-322, 264-330, 264-331, 264-319 entitled: "Aldicarb Sulfone; Aldicarb Sulfoxide Twenty-Nine-Day Water Inclusion Study in Rats".

Conclusion:

Under the conditions of this study, the no-effect level of 1.2 ppm in water was determined (for cholinesterase depression in plasma and RBC).

Summary of Toxicity Data For Alicarb Sulfoxide and Alicarb Sulfone.

Aldicarb Sulfoxide	Oral LD_{50} (Rat)	= 0.88 mg/kg
	90 Day Dog; 180 Day Rat	NEL = 0.5 mg/kg/day
	2 year rat	NEL = 0.3 mg/kg/day
	6 month rat	NEL = 0.125 mg/kg/day
Aldicarb Sulfone	Oral LD_{50} (Rat)	= 25 mg/kg
	90 day dog; 180 day rat	NEL = 5.4 mg/kg/day
	2 year rat	NEL = 2.4 mg/kg/day
1:1 mixture; aldicarb sulfoxide plus aldicarb sulfone	2 year rat	NEL = 0.6 mg/kg/day

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Methodology:

Analytical grade aldicarb sulfoxide and aldicarb sulfone were given sample numbers 44-268 and 44-269 respectively. Since aldicarb sulfone is unstable when dissolved in water, all water preparations were refrigerated until administered and samples taken for analyses were frozen.

Five, nominal dose levels, 19.2, 4.8, 1.2, 0.3, and 0.075 ppm were administered to young adult Wister rats. Ten rats per sex per dose were used in this 29 day study.

Body weight, food consumption and water consumption were measured weekly. Plasma and red blood cell cholinesterase were determined at days 9, 16 and 30. Brain cholinesterase was measure at termination. Packed cell volume and total plasma protein were measured at day 9, 16 and 30.

Water was administered using an 8 ounce watering bottle with tube and ball bearing tips. Water and food was supplied ad libitum. Animals were housed singulady.

Samples of test material administered were analyzed as well as samples of test material taken from the bottles after 7 days. Weekly, fresh samples were administered.

At the end of the study, the animals were killed and brain cholinesterase levels determined.

Results:

Cholinesterase Inhibition - The study shows the no-effect level to be 1.2 ppm when aldicarb sulfoxide and aldicarb sulfone are mixed in a 1:1 ratio and administered in drinking water for 30 days to male rats. This 1.2 ppm converts to 0.12 mg/kg/day. Statistically significant decreases were noted for plasma cholinesterase at day 9 and for red blood cell cholinesterase at day 30 in male rats at the 4.8 ppm dose level (0.47 mg/kg/day). Also, plasma and red blood cell cholinesterase were inhibited at the highest dose level tested of 19.2 ppm (1.67 mg/kg/day) in both male and female rats at the three periods tested, 9, 16 and at 30 days. Brain cholinesterase was also significantly decreased in female rats at 30 days.

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Water consumption was reduced in male and female rats at 19.2 ppm during the 30 day period. Food consumption was reduced also at the highest dose level during the 30 day period in male rats but was reduced only during the first week in female rats.

No measureable differences were noted in packed cell volume or in total plasma protein between treated and control groups.

No animal died during this experiment in the groups tested.

S F Biscardi 5/28/82

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