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INFORMATION WHICH MAY REVEAL AN INERT INGREDIENT IS NOT INCLUDED

Non-thermal ULV ground and ULV aerial aerosol application of Baygon for mosquito control. Identified as MOS (Mosquito Oil Soluble)

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TB

PM 12

Registration No. 3125-GNA (PA-305

Registrant: Chemagro Agricultural Division
Mobay Chemical Corp.
P. O. Box 4913
Kansas City, Missouri 64120

Formulation: Active Ingredient (1 lb./gal)

2-(1-methylethoxy) phenol methyl carbamate	12.8%
Xylene	33.9%
Inert Ingredient [redacted]	53.3%

Recommendations: To evaluate the potential hazard to humans from occupational and environmental exposure, the following questions need to be answered.

1) What was the extent of the human dermal and inhalation exposure of the applicator and occupant of those areas where Baygon MOS was applied to demonstrate its effectiveness by aerial and ground equipment?

2) What is the resulting air concentrations in the treated areas when this material is applied by either aerial or ground equipment at the recommended rates? This information should be the result of air sampling and direct measurements of exposure in the treated areas.

Add the statement to the label "Avoid bbeathing spray mist."

Summary Toxicological Evaluation
Supplement October 1, 1974 to brochure dated March 15, 1963

Acute Oral Toxicity

Species	Sex	No. of Animals	Formulation	Diluent	LD_{50} mg/kg	Observation
Rat	M	12	Technical	Polyethylene glycol 400	>60	Max RBC, plasma ChE in 10-20 min.
Rat	F	12	Technical	Polyethylene glycol 400	>40-<60	Max RBC, plasma ChE in 10-20 min.

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Species	Sex	No. of Animals	Formulation	Diluent	LD_{50}	Observation
Rat	F	12	Technical	Polyethylene glycol 400	>40-<60	Max RBC, plasma ChE↓ in 10-20 min.
Rat	M	16	MOS 1 lb/gal	20-80 ethanol-propylene glycol	1570 (1040-2360)	
Rat	F	16	MOS 1 lb/gal	20-80 ethanol-propylene glycol	609 (472-788)	
Rat	M	16	1.5 lb/gal (14.8%)	propylene glycol	199.5 (134-296)	
Rat	F	16	1.5 lb/gal (14.8%	propylene glycol	141 (86.5-230)	
Rat	F	24	45%	20-80 ethenol propylene glycol	225	
Rat	F	21	Metabolite o-hydroxyphenyl N-Methylcarbamate	0.2% aqueous Carboxymethyl cellulose	110	
Sat	F	8	Metabolite 2-isopropoxy phenol	20-80 ethenol-propylene glycol	>1000	
Sheep	-	13	50% Drench Powder		40	Signs of CNS involvement 40 in 4 to55 min, followed by death within 15 to 45 min.

Acute Intrapintmeal Toxicity

Species	Sex	No. of Animals	Formulation	Diluent	LD_{50} mg/kg	Observations
Rat	F	264	Technical	20-80 ethanol propylene glycol	9-12.5	
Rat	F	264	1.5 lb/gal	20-80 ethanol propylene glycol	85-112	
Rat	F	24	1.5 lb/gal	20-80 ethanol propylene glycol	110	
Rat	F	64	1.5 lb/gal	20-80 ethanol propylene glycol	90-100	

Acute Dermal Toxicity

Acute Dermal Toxicity

Species	Sex	No. of Animals	Formulation	Diluent	LD_{50} mg/kg	Observation
Rat	F	24	45%	Undiluted	>4000	
Rabbit	M	2	1.5 lb/gal (14.8%)	Undiluted	>2000	Cholinergic
Rabbit	F	2	1.5 lb/gal 14.8%	Undiluted	>2000	Cholinergic
Rabbit	M	8	MOS 1 lb/gal	Undiluted	1190	
Rabbit	F	8	MOS 1 lb/gal	Undiluted	1190	

Acute Inhalation Toxicity

Species Species	Sex	No. of Animals	Formulation	Exposure Time	LC_{50} mg/L	Observation
Rat	M	50	MOS 1lb/gal	1 hr.	3.2	Cholinergic at 0.5 mg/L
Rat	F	50	MOS 1 lb/gal	1 hr.	3.2	Cholinergic at 0.5 mg/L
Rat	M	60	MOS 1 lb/gal	6 hr.	1.13	Cholinergic at 0.28 mg/L with Plasma, RBC ChE↓ 20-40%
Rat	F	60	MOS 1 lb/gal	6 hr.	>1.13	Cholinergic at 0.28 mg/L with Plasma, RBC ChE↓ 20-40%

Acute Eye Irritation Studies

Species	No. of Animals	Formulation	Treatment	Observation
Rabbit	5	MOS 1 lb/gal	Washed (0.1 ml)	slight erythema <48 hr.
Rabbit	3	MOS 1 lb/gal	Unwashed (0.1 ml)	Slight erythema and chemosis <72 hr.

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Species	No.oof Animals	Formulation	Treatment		Observation
Rabbit	5	1%	Washed (0.1 ml)	SI	Slight erythema <24 hr
	3	1%	Unwashed (0.1 ml)		No irritation
Rabbit	6	1.4 lb/gal Oil Soluble Conc	Unwashed (0.1 ml)		Erythema, chemosis, corneal opacity, ulceration >7 days
Rabbit	6	50% powder	Unwashed	100 mg	Erythema, chemosis ulceration >7 days

Acute Dermal Irritation Studies

Species	No. of Animals	Formulation	Dose	Observation
Rabbit	6	MOS 1 lb/gal	0.5 ml	Score 1.25 >72 hr.
Rabbit	6	1 %	0.5 ml	Score 0.58 >72 hr.
Rabbit	6	1.4 lb/gal Oil Soluble Conc	0.5 ml	Score 0.75 >72 hr.
Rabbit	6	50% powder	500 mg	Score 1.14 <72 hr.

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Subacute Toxicity Studies

Inhalation Study on HDS 1 lb./gal. (13.3%) - Three groups of fifteen male and fifteen female rats were exposed to each aerosol concentration of 31.2, 153, 231 mg/m^3 for 15 daily exposures of 6-hours each. The controls consisted of 5 males and 5 females.

Results: The two lower levels were asymptomatic. At the 231 mg/m^3 level decreased weight gain, labored respiration and death of 4/15 for both sexes was reported during the second and third week. Gross pathology includes emphysema and edema of the lungs. Hematological, clinical chemistry and urine analysis were all normal for all their dosage levels. Dose-related depression of plasma, erythrocyte and brain cholinesterase activity of 20 to 40% was reported for the 153 and 231 mg/m^3 levels. Significant alterations of organ weights were noted only at the 231 mg/m^3 level. Histopathological examination of lung, liver and kidneys showed no differences between animals exposed to 231 mg/m^3 and the control animals. It was concluded on the basis of this study that the maximum acceptable concentration of HDS 1 lb./gal. is 150 mg/m^3.

Subacute Toxicity Studies

Oral Studies on the Technical material (97.7%)

1) Intubation - Four groups of ten males and 10 female rats per group received daily dosages of the technical material in (lutrol) polyethylene glycol 400 at 0, 3, 10 and 30 mg/Kg for four weeks. Plasma and erythrocyte cholinesterase activity was determined in 3 rats of each sex from each group 15 minutes after dosing on days 3, 8, 14, 21 and 28, and additionally, 5 hours after the final dose on day 28. Brain cholinesterase activity was determined in 5 rats of each sex from each group 2 hours after the final administration of the test material.

   Results: Cholinergic signs were reported at the 30 mg/Kg level. A dose-related decrease in brain, plasma and erythrocyte cholinesterase activity was reported for the 10 and 30 mg/Kg levels. The cholinesterase no effect level for this study is 3 mg/Kg (60 ppm).

2) Dietary - Four groups of 5 male rats each were fed dietary levels of 0, 250, 750 and 2000 ppm for 15 weeks. Plasma and erythrocyte cholinesterase activity was determined at 0, 8, 21, 51, 64, 83 and 105 days of feeding.

   Results: The animals were symptomatic at all dietary levels. The levels of plasma and erythrocyte cholinesterase activity depression were neither content nor dose-dependent.

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Human Dermal Exposure

1) Spray application - The test material containing 2% Baygon and 0.5% dichlorvos was sprayed on the upper arm of four adult volunteers (3 men and 1 woman). A total of 6 applications were made consisting of a 1 second application at 10 minute intervals over a period of one hour. The total amount applied per person was approximately 41 mg of Baygon and 8 mg of dichlorvos. Plasma and erythrocyte cholinesterase activity was measured initially and at 1, 2, 4, 6, 7 and 24 hours after the experiment began. Urine samples were collected at 24 and 48 hours.

   Results: The subjects were asymptomatic. Plasma and erythrocyte cholinesterase activity was not depressed. Neither Baygon nor dichlorvos were detected in the blood or urine samples.

2) Dust application - Two applications of a 1% Baygon dust was applied to the upper arm of four adult male volunteers. The first application consisted of a 7 x 7 cm plaster applied for 30 minutes. This was followed by 500 mg of dust on a 7 x 7 cm cellulose pad, applied to an abraded area of the skin for 2 hours. Plasma and erythrocyte cholinesterase activity was measured initially; at the completion of the exposure and at 1, 3, 5 and 24 hours after the last exposure. Urine samples were collected at 24 and 48 hours.

   Results: The subjects were asymptomatic. Plasma and erythrocyte cholinesterose activity were not depressed. Isopropoxyphenol was not detected in the urine samples.

Reproduction Studies

A revised translation of the reproduction study reviewed in Supplement No. 5 dated October 8, 1971 has been included in this brochure. Both Dr. Parkin, petition 2F1244 dated July 10, 1971 and Mr. Coberlys, 5H-5068 petition dated March 21, 1975, have cited a deficiency in the testing procedure. Report No. 23299 page 6, paragraph 2 reading "the animals were treated with Bay 39007 during the study except for the mating period, gestation and littering of the young" has been corrected to read, "the animals were treated with Bay 39007 during the entire study, including the mating period, etc."

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Label:

Use -

Non-thermal ULV ground and ULV aerial aerosol application for mosquito control in urban, open field and wooded areas.
Ground application - 4 to 72 fluid ounces per acre
Aerosol application - 4 to 16 fluid ounces per acre

Restrictions -

For Use by Qualified Pest Control Operators and Commercial Applicators. Do not use as an indoor space spray. Do not apply to humans or animals. Do not use on food, feed or forage crops.

Precautionary Labeling -

Warning: May be fatal if swallowed, inhaled, or absorbed through the skin. Do not get in eyes, on skin or on clothing. In case of prolonged exposure, wear natural rubber gloves, protective clothing and goggles. In case of contact, wash immediately with soap and warm water. Do not store near feed or food products. Do not contaminate food. Wash hands, arms, and face thoroughly with soap and water before eating or smoking. Wash all contaminated clothing with soap and hot water before reuse.

First Aid -

If illness occurs, get prompt medical aid.
To Physician - Atropine sulfate is antidotal.

Discussion:

The directions for use recommend the application of Baygon MOS to populated areas. A considerable amount of data has been presented for the effects of Baygon MOS on the environment, its efficacy as a mosquito adulticide in populated areas, and toxicity data on experimental animals. There has been no evidence presented to evaluate the hazard to the applicator or occupants of the treated areas.

Raymond E. Landott, Pharmacologist
Toxicology Branch
Registration Division

cc: Branch Reading File
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Initial O. E. Paynter

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