



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

6-21-89

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: EPA Reg. No./File Symbol

8329-GL
8329-GV

Strike 4-12 ULV

Magnum 44 ULV

FROM:

William S. Woodrow WSW 6-20-89
Precautionary Review Section
Registration Support Branch
Registration Division (H75-05C)

E 6/21/89

TO:

LaRocca/Heyward (PM 15)
Insecticide - Rodenticide Branch
Registration Division (TS-767C)

APPLICANT:

Clarke Outdoor Spraying Co., Inc.
159 N. Garden Ave.
Roselle, IL 60172

FORMULATION FROM LABEL:

(Strike 4-12 ULV)

Active Ingredient(s):

Permethrin (3-Phenoxyphenyl) methyl (+) cis.
trans-3-(2,2-dichloroethenyl)-2,2-dimethyl-
cyclopropane carboxylate
Technical Piperonyl Butoxide

% by wt.

4.00
12.00

Inert Ingredient(s):

84.00

Total 100.0%

(Magnum 44 ULV)

Active Ingredients:

Permethrin (3-Phenoxyphenyl) methyl (+) cis + trans
-3-(2,2-dichloroethenyl)-2,2-dimethyl-
cyclopropane carboxylate
Technical Piperonyl Butoxide

4.00%
4.00%
92.00%

INERT INGREDIENTS:

BACKGROUND:

The Clarke Spraying Co. submitted acute oral, acute dermal, acute inhalation, primary eye and dermal irritation, and dermal sensitization studies to support two products: Strike 4-12 ULV (4% Permethrin & 12% Piperonyl Butoxide), and Magnum 44 ULV (4% Permethrin & 4% Piperonyl Butoxide). MRID NOS. used were 408805-02 through 408805-07.

RECOMMENDATION:

- 1) The acute toxicity studies submitted by Clarke Outdoor Spraying are acceptable to RSB/PRS, to support Strike 4-12 ULV (Reg. No. 8329-GU), however these data do not support Magnum 44 ULV. The acute toxicity studies currently submitted were conducted using Strike 4-12 ULV (12.00% piperonyl butoxide).
- 2) Registration of the Magnum 44 ULV product will require submission of acute oral, dermal, inhalation, primary eye and dermal irritation, and a dermal sensitization studies, conducted using the Magnum 44 ULV formulation.

LABELLING: (Strike 4-12 ULV)

- 1) The CAUTION label signal word is appropriate

2) The Precautionary Statements are acceptable.

3) Add the following to the Statements of Practical Treatment:

"If on skin: Wash with plenty of soap and water. Get medical attention.

If in eyes: Flush with plenty of water. Call a physician."

DATA REVIEW FOR ACUTE ORAL TOXICITY TESTING (§81-1)

Product Manager: (15) Reviewer: Woodrow
 MRID No.: 408805-02 ~~Waller~~
 Testing Facility: Cosmopolitan Safety Eval. Report Date: 6-20-89
 Author(s): G.R. Robbins Report No. A1864
 Species: Rat, Sprague Dawley
 Age: young adult Observation Days (Post
 Weight: M 240-340, F 200-300g Exposure): (14); other ()
 Source: not given
 Test Material: Strike 412 (Permethrin 4%, PB 4%), liquid
 Quality Assurance (40 CFR §160.12): None

Conclusion:

- LD₅₀ (mg/kg): Males = ; Females = ; Combined =
- The estimated LD₅₀ is 5.0 g/kg
- Tox. Category: IV. Classification: Guidelines

Procedure (~~Deviations From §81-1~~): 5.0 g/kg administered to each of 5M & 5F by gavage. Animals observed for mortality and clinical signs after day of dosing, 2x daily. To 14 days & necropsy. Body wt. on day 0, week 0.
 Results:

Reported Mortality

DOSAGE (<u>2</u> /kg)	(NUMBER KILLED/NUMBER TESTED)		
	Males	Females	Combined
<u>5g/kg</u>	<u>0/5</u>	<u>0/5</u>	<u>0/10</u>

Symptomology & Gross Necropsy Findings:

Clinical signs: 1 hr, all rats showed yellow perianal staining. Day 1, 2 females had convulsions. Day 2 - rats normal, except 3/5 females showed ventral staining; all rats appeared normal thereafter. All rats gained weight. All organs and tissues appeared normal at necropsy.

DATA REVIEW FOR ACUTE DERMAL TOXICITY TESTING §81-2)

Product Manager: (15)

MRID No.: 408805-03

Testing Laboratory: Cosmopolitan Safety Eval.

Author(s): G. R. Robbins

Species: Rabbits, N 2 type

Sex: 5M+5F

Wt.: 2.5-3.5 kg

Test Material: Strike 4-12 (4% Permethrin)

Quality Assurance (40 CFR §160.12): none

Reviewer: Woodrow Waller

Report Date: 6-20-89

Report No. B1864

Summary:

1. LD50 (mg/kg): Males = ; Females = ; Combined = ;
2. The estimated LD50 is > 2.0 g/kg
3. Tox. Category: III. Classification: Guidelines

Procedure (~~Deviations From §81-27~~): 2.0 g/kg applied to clipped, intact skin of 5M+5F rabbits. Doses protected by "wraps" - 24 hour contact. Rabbits observed 14 days for mortality and toxic signs. At 14 days, rabbits subjected to necropsies.

Results:

Reported Mortality

DOSAGE (g/kg)	(NUMBER KILLED/NUMBER TESTED)		
	Males	Females	Combined
2.0 g/kg	0/5	0/5	0/10

Symptomology & Gross Necropsy Findings:

No pharmacologic or toxic signs. Some slight irritation at application sites. Necropsies did not reveal any tissues or organ abnormalities.

DATA REVIEW FOR ACUTE INHALATION TOXICITY TESTING (§81-3)

Product Manager: (15) Reviewer: W. Woodrow
 MRID No.: 408805-04 Report Date: 6-20-89
 Testing Laboratory: Cosmopolitan Safety Eval Report No. C1864
 Author(s): G. P. Robbins
 Species: Rat, Sprague Dawley
 Sex: 5M 25F Weight: M 240-340, F 200-300g
 Source: not given
 Test Material: Strike 4-12 (49% Permethrin), liquid
 Quality Assurance (40 CFR §160.12): none

Summary:

1. LC₅₀ (mg/kg): Males = _____; Females = _____
 _____; Combined = _____
2. The estimated LC₅₀ is > 5.1 mg/L
3. Mean Concentration: _____
4. Tox. Category: IV. Classification: Guidelines

Procedure (~~Deviations From §81-2~~): 47.4 liter exposure chamber, Aerosol generation by DeVilbiss glass nebulizer, using Gast Airpump. 4 hr exposure. A control group of 5M 25F was exposed 4 hours, to air only. The actual concentration measured 3K using an aerosol

Results:

Exposure Concentration (mg/L)	Reported Mortality		
	(NUMBER KILLED/NUMBER TESTED) Males	Females	Combined

Symptomology & Gross Necropsy Findings:

analysis monitor & two super imposed filters. Areas between filters contained activated charcoal. Samples collected at 1 liter/min. Particle size & geometric std deviation (g) measured 2K, using a Cascade Impactor. Animals were observed for mortality & toxic signs

DATA REVIEW FOR ACUTE EYE IRRITATION TESTING (§81-4)

Product Manager: (15) Reviewer: Woodrow
 MRID No.: 408805-05 Report Date: 6-20-89
 Testing Laboratory: Cosmopolitan Safety Eval. Report No. D1864
 Author(s): G. R. Robbins
 Species: Rabbits
 Sex: not given Weight: 2.0 - 3.5 kg
 Source: not given
 Dosage: 0.1ml
 Test Material: strike 4-12 (4% Permethrin), liquid
 Quality Assurance (40 CFR §160.12): none

Summary:

Tox. Category: III Classification: Girdlines

Procedure (Deviation From §81-4): 0.1ml test material to eye of each of 6 rabbits (conjunctival sac). Eye lids held together 1 sec only; treated eyes not washed. All eyes opened & sealed for irritation according to Draize @ 1, 2, 4, 48, 72 hrs.

Results:

	Observations							
	(number "positive"/number tested)							
	Hour	Days						
	1	1	2	3	4	7	14	21
Cornea								
Opacity	0/6	0/6	0/6	0/6				
Iris	0/6	0/6	0/6	0/6				
Conjunctivae								
Redness	6/6	3/6	1/6	0/6				
Chemosis	3/6	0/6	0/6	0/6				
Discharge	-	-	-	-				

Comments: No iris or corneal involvement. 1/6 animals 1-0 score for redness irritation @ 48 hours; absent by 3 days.

DATA REVIEW FOR SKIN IRRITATION TESTING (-5)

Product Manager: (15)
 MRID No.: 408805-06
 Testing Laboratory: Cosmopolitan Safety Eval
 Author(s): G. P. Robbins
 Species: Rabbit, N 2. type
 Age: not given
 Sex: not given
 Weight: 2.0-3.5 kg
 Dosage: 0.5ml
 Test Material: Alcike 4-12 (49% Permethrin), liquid
 Quality Assurance (40 CFR §160.12): none

Reviewer: Woodrow M. Waller
 Report Date: 6-20-89
 Report No.: E1864

Summary:

The Primary Irritation Index = 0.5

Toxicity Category: III

Classification: Guidelines

Procedure (~~Deviations From §81-5~~): 0.5ml test material introduced under 1" sq. gauze pad held by Tape, to each of 6 clipped rabbit backs. Entire backs wrapped in plastic shielding. 4 hr contact. Wrapping removed, sites wiped, 30-min later after cleaning & @ 24, 48, 72 hrs sites scored for irritation according to Draize - (Max. score Results: possible = 8.0

At 45 min, 6/6 animals showed 1.0 for erythema, 3/6 showed edema.
At 24 hrs 3/6 showed 1.0 for erythema, no edema.
At 48 hrs 2/6 showed 1.0 for erythema.
At 72 hrs, no visible irritation.
A minimally irritating substance.

Special Comments:

during exposure, & at 1, 3, 5 hrs post exposure, & 1x daily to 14 days & necropsies. Body wts at 0, 2, 3, 4, 7 & 14 days.

Results - Nominal concentration = 15.63 mg/L

The actual aerosol concentration (determined gravimetrically

was:	Time	filter wt. gain	mg/L	mean
	30 min	50.3	5.03	5.1 mg/L
	2 hr - 17 min	51.8	5.18	
	3 hr - 17 min	50.5	5.05	

Particle size:

MM Dia = approx. 0.8 μ at both 1 hr 15 min, & at 3 hrs. Geometric std. deviation = ± 2.9 to ± 3.0
Thus, the particles were in a respirable range.

Control rats appeared normal. Treated rats (exposed to test material), showed reduced activity; 3/5 females showed perianal staining, all animals wet on backs. Beginning day 2, all rats appeared normal. Body weight gain was comparable for treated & control rats.

Necropsies did not reveal any tissue or organ abnormalities.

No mortality.

DATA REVIEW FOR SKIN SENSITIZATION TESTING (§81-6)

Product Manager: (15)
 MRID No.: 408805-07
 Testing Laboratory: Cosmopolitan Safety Eval.
 Author(s): G. R. Rabkins
 Species: Guinea pig
 Sex: Male
 Source: Comm. Res. Lab. Animals
 Test Material: Residue 4-12 (4% Permethrin), liquid
 Positive Control Material: Not named.
 Quality Assurance (40 CFR §160.12): none

Reviewer: ^{Woodrow} M. Waller
 Report Date: 6-20-89
 Report No. E1864

Method: Buchler

Summary:

1. This product ☒ is / is not a dermal sensitizer.
2. Classification: Guidelines

Procedure ~~(Deviation From §81-6)~~: + control, "periodically a known sensitizer is tested under the same conditions".

Induction: 0.5ml test material applied to clipped right sides of 10 m.g.p., under 20x20mm Webril cloth patch/adhesive

Results: Tape & trunk of g.p. wrapped in plastic wrap - 6hr contact. Wrappings removed, treated sites wiped. Each site examined and scored according to Draize @ 24 & 48 hrs, after wrap removal. This induction repeated 2 more times at weekly intervals (3 inductions total). Animals then rested 2 weeks before Challenge.

Challenge: 2 weeks after last induction application, animals challenged = 0.5ml as before (on right sides), and also on clipped left sides (virgin sites). 6hr contacts.

Re-challenge: 14 days after 1st challenge, animals again challenged on left sides, using a 2nd virgin test site. All challenge/rechallenge applications scored 24 & 48 hrs after patch removal.

Results: Challenge scores compared to as. induction scores; if as. challenge score "substantially" higher

than induction (w.) scores, considered a + sensitive -

- + criteria:
- 1) erythema score > 1 grade
 - 2) edema score > 1 grade
 - 3) size of diameter of erythema increased by more than 1 cm.

24 hrs					48 hrs		
induction challenge challenge ^{re}					induction challenge rechallenge		
Test	Et	1.0	1.6	1.3	1.0	1.4	1.2
Material	Ed	0.6	1.3	1.3	0.5	1.2	2.9
	D	2.7	3.2	3.4	2.6	3.1	3.3
Positive	ER	0.9	2.3		0.7	2.2	
Control	Ed	0.4	1.7		0.2	1.1	
	D	1.6	3.9		1.6	3.9	

Et = erythema, Ed = edema, D = dia. of erythema wheel (cm)

It may be seen in the average erythema & edema scores at 24 & 48 hours, that challenge & rechallenge scores were "substantially" greater than induction scores.

Strain 4-12 is a dermal sensitive-inguineal type.

670 Piperonyl Butoxide

Tox Chem No. 652 BB Permethrin File Last Updated 6-20-89 Current Date 6-20-89

Study/Lab/Study #/Date	Material	EPA Accession No.	Results: LD50, LC50, PIS, NOEL, LEL	TOX. Cat.	CORE Grade/Doc. No.
Acute oral LD50, Rat Cosmopolitan Safety Eval. # A1864. 5-15-88	Strike 4-12 ULV 4-09, Permethrin 12-09, Piperonyl Butoxide	408805-02	LD50 > 5.08/kg	IV	Guide-lines
Acute dermal LD50, Rabbit Cos. Safety Eval. # B1864 5-29-88	"	408805-03	LD50 > 2.08/kg	III	Guide-lines
Acute inhalation LC50, Rat. Cos. Safety Eval. # C1864 6-10-88	"	408805-04	LC50 > 5.1 mg/L	IV	Guide-lines
Primary eye irrit. Rabbit Cos. Safety Eval. # D1864 4-22-88	"	408805-05	6 animals 1.0 score for adverse irritation at day 2, all clear by day 3	III	Guide-lines
Primary dermal irrit. Rabbit Cos. Safety Eval. # E1864 4-20-88	"	408805-06	A minimally irritating substance; no visible irritation by 72 hrs	III	Guide-lines
Dermal sensitization, guinea pigs. Cos. Safety Eval. # F1864 6-17-88	"	408805-07	Atte 4-12 ULV did sensitize guinea pigs	-	Guide-lines