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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

ID No.: 004822-UGG

DP Barcode: D210139

Chemical: Benzyl benzoate

Test Material: Raid Product 319 (7869D1)

From: Lawrence A. Fried, Biologist
Precautionary Review Section
Registration Support Branch (7505W)
Registration Division

10/31/95

To: Richard Keigwin, PM-10
Insecticide-Rodenticide Branch

Applican S.C. Johnson & Son, Inc.
1525 Howe Street
Racine, WI 53403

FORMULATIC FROM LABEL

Ingredient(s)	% by wt.
Benzyl Benzoate	4.60
Inerts	95.40
Total	100.00

BACKGROUND

S. C. Johnson & Son, Inc. has submitted acute oral toxicity (MRID No. 434124-03), acute dermal toxicity (MRID No. 434124-04), acute inhalation toxicity (MRID No. 434361-01), primary eye irritation (MRID No. 434124-05), primary skin irritation (MRID No. 434124-06), and dermal sensitization (MRID No. 434124-07) studies on Raid #319 Allergen Control Carpet Rug & Room Deodorizer. The acute toxicity studies were performed by Hazleton Wisconsin, Inc., Madison, Wisconsin, and Bio-Research Labs, Quebec, Canada, using the Batch/Lot No. 7869D1 sample.

RECOMMENDATION

Acute Oral: Category III. The submitted study is acceptable.

PRS recommends that the test material be administered with minimal dilution. It was stated in the study that the test material was administered at a volume of 10 mg/kg of body weight.

Acute Dermal: Category III. The submitted study is acceptable.

Acute Inhalation: Category IV. The submitted study is acceptable.

Eye Irritation: Category III. The submitted study is acceptable.

Skin Irritation: Category IV. The submitted study is acceptable.

Dermal Sensitization: Not a skin sensitizer to guinea pigs. The submitted study is acceptable.

PRS recommends that a minimum of 0.4 g of test material should have been used in the test; however, an inadequate quantity of moistened test material (0.2 g) was used. Furthermore, the amount of vehicle used to moisten the test material was not reported. Also, the guidelines recommend that five test animals be be used as positive controls; however, there were only four.

LABELING

The appropriate signal word is: **"CAUTION"**

Recommended Precautionary Statement

Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling.

Recommended Statement of Practical Treatment

IF SWALLOWED: Call a physician or Poison Control Center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Flush eyes with plenty of water. Call a physician if irritation persists.

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

Product Manager: 10
Reviewer: L.F.
MRID No.: 434124-03
Report No.: HWI 40101010
Testing Facility: Hazleton
Report Date: 04/29/95
Author: Steven M. Glaza
Species: Rat
Age: Young adult
Weight: Males: 283g-299g; Females: 241g-280g.
Source: Charles River Labs, Inc., Portage, Michigan
Test Material: Raid Product 319, #7869D1
Quality Assurance (40 CFR 160.12): Present

Conclusion: LD_{50}: Males = LD_{50} > 5,000 mg/kg
Females = 4,758 mg/kg
Combined = 5,423 mg/kg

Toxicity Category: III
Classification: Acceptable
Procedure (Deviations from §81-1): None

Results:

Dosage (mg/kg)	Number Dead/Tested		
	Males	Females	Combined
4,000	0/5	2/5	2/10
5,000	1/5	2/5	3/10
6,000	1/5	5/5	6/10

Pharmacologic and/or toxicologic symptoms: Clinical signs of toxicity included hunched posture, dark/yellow stained urogenital area, soft stool, staggered gait, yellow/dark stained abdomen, red-stained face, hypoactivity, miosis, tachypnea, dyspnea, and death. All mortality occurred within one day of test material administration. All surviving animals returned to a normal appearance by day-3 after treatment. Allsurviving animals exhibited body weight gain throughout the study.

Gross Necropsy Findings: At necropsy, the stomach in two females that died on test (DOT) at 6,000 mg/kg had red areas of variable size in the mucosa of the stomach, possibly postmortem change. The small intestines in three DOT animals given 5,000 mg/kg contained mucoid material of variable color which possibly represented postmortem change and normal ingesta content. All findings in the animals that survived to study termination, were considered incidental and unrelated to the test material.

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

Product Manager: 10 **Reviewer:** L.F.
MRID No.: 434124-04 **Report No.:** HWI 40101011
Author: Steven M. Glaza **Report Date:** 03/30/94
Species: Rabbit
Age: Adult
Weight: Males: 2,548g-2,863g; Females: 2,487g-2,731g.
Source: HRP, Inc., Kalamazoo, MI
Test Material: Raid Product 319, #7869D1
Quality Assurance (40 CFR 160.12): Present

Conclusion: LD_{50}: Males = LD_{50} > 2,000 mg/kg
Females = LD_{50} > 2,000 mg/kg
Combined = LD_{50} > 2,000 mg/kg

Toxicity Category: III
Classification: Acceptable
Procedure (Deviations from §81-2): None

Results:

Dosage	Number Dead/Tested		
	Males	Females	Combined
2,000 (mg/kg)	0/5	0/5	0/10

Pharmacologic and/or toxicologic symptoms: The test material produced slight to moderate dermal irritation which cleared in all animals by day 7.

Body weight gain: All animals exhibited body weight gain.

Gross necropsy findings: The gross necropsy at termination revealed no visible lesions.

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

Product Manager: 10 **Reviewer:** L.F.
MRID No.:434361-01 **Report No.:**90918
Report Date: July 28, 1994

Testing Laboratory: Bio-Research Lab Ltd.
Authors: G. Beattie and L. Pouliot
Species: Rat
Weight: Males: 194 to 212 g; Females: 151 to 164 g.
Source: Charles River, Quebec, Canada
Test Material: Raid Product 319, Formula No. 7869D1
Quality Assurance (40 CFR 160.12): Present

Test Conditions: Two groups of Sprague-Dawley CD rats, each containing five males and five females, were exposed by nose-only inhalation to air (Group 1) or to powder formulation of Raid 319, Formulation No. 7869D1 (Group 2) once for four hours and were observed during a subsequent 14-day period.

The mean gravimetric chamber concentration for treated Group 2 was determined to be 2.13 mg/L (CV = 14.9%; targeted concentration = 2.0 mg/L). The mass median aerodynamic diameter and geometric standard deviation (MMAD + or - GSD) were 3.3 + or -2 micro g; 2.0 micro grams was the size below which there were 25% of the particles by mass. Although the expected active ingredient concentration was 4.6%, the mean concentration of active ingredient was 117.5 micro g/L or 4.4% of the total formulation. This deviation is considered not to have affected the outcome of the study.

All animals were examined twice daily for mortality and morbidity. In addition, each animal was examined before, during and after exposure and twice daily during the 14-day observation period, for any overt signs of reaction to treatment. Body weights were measured for each animal for randomization, on Days 1,2,3,4,8 and 14, and immediately before sacrifice at study termination. A gross pathological examination was performed and selected tissues were weighed and histopathologically evaluated.

Summary: There were no deaths and no treatment-related clinical signs. There were no inter-group differences suggestive of toxicity of Raid Product 319, Formulation No. 7869D1, on body or organ weights, and there were no treatment-related gross or histopathological findings.

Toxicity Category: IV
Classification: Acceptable

Results: The results of the inhalation test are summarized below:

Exposure Concentration (mg/l)		Number Dead/Tested		
Airborne	Nominal	Males	Females	Combined
2.13 (1.87-2.57)	5.76	0/5	0/5	0/10
EXPOSURE CONDITIONS				
MMAD	3.3			
GSD	2.0			
Particles ≤4.0 μm (Avg)	60%			
T-95 value	--			
Chamber air flow rate	100 l/min			
Oxygen level	20.1%			
Chamber Temperature	22-25° C			
Chamber Relative Humidity	42-55%			

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

Product Manager: 10
MRID No.: 434124-05
Author: Steven M. Glaza

Reviewer: L.F.
Report No.: HWI 40101013
Report Date: April 1, 1994

Conclusion:
Toxicity Category: Category III
Classification: Acceptable
Quality Assurance (40 CFR §160.12): Included
Procedure (Deviations from §81-4): None

Testing Facility: Hazleton Wisconsin, Inc.

Test Material: Raid Product 319, #7869D1

Test Animal: Rabbit; New Zealand white albino; Hra:(NZW)SPF; 4 males and 2 females
Age: Adult
Weight: 2,551 to 2,657 g
Source: HRP, Inc., Kalamazoo, MI

Test Conditions: Each rabbit received 0.1 g of the test material placed into the everted lower lid of the right eye. The upper and lower lids were gently held together for one second. The eyes of the rabbits remained unflushed.

Results: Ocular irritation cleared in 7 days.

Observations	Number positive/tested at					
	1 Hr	24 Hrs	48 Hrs	72 Hrs	4 Days	7 Days
Cornea Opacity	5/6	2/6	1/6	0/6	0/6	0/6
Iris	6/6	3/6	0/6	0/6	0/6	0/6
Conjunctivae: Redness	6/6	6/6	5/6	5/6	4/6	0/6
Chemosis	5/6	0/6	0/6	0/6	0/6	0/6
Discharge	5/6	0/6	0/6	0/6	0/6	0/6

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DATA REVIEW FOR SKIN IRRITATION TESTING (§81-5)

Product Manager: 10
MRID No.: 434124-06
Author: Steven M. Glaza

Reviewer: L.F.
Report No.: HWI 40101012
Report Date: 03/23/94

Conclusion:
Toxicity Category: IV
Classification: Acceptable
Quality Assurance (40 CFR §160.12): Present
Procedure Deviations from §81-5: None

Testing Facility: Hazleton Wisconsin, Inc.

Test Material: Raid Product 319, #7869D1

Test Animal: Rabbit, New Zealand White
Age: Young adult (2-4 months)
Weight: 2,384-2,760 g
Source: HRP, Inc., Kalamazoo, MI

Test Conditions: The test material was applied to the intact skin on each animal's back (approximate exposure area of 6.25 cm^2) in the amount of 0.5 g and was moistened with 0.9% saline. the area of application was covered with a 2.5-cm x 2.5-cm gauze patch secured with paper tape, loosely overwrapped with Saran Wrap™ , and secured with Elastoplast™ tape to provide a semiocclusive dressing. Collars were not used to restrain the test animals during the 4-hour exposure period.

Results: Only very slight erythema reactions in all animals and a very slight edema reaction in one animal was observed.

Observations	Number positive/tested at			
	1 Hr	24 Hrs	48 Hrs	72 Hrs
Erythema	6/6	3/6	2/6	0/6
Edema	1/6	1/6	0/6	0/6

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

Product Manager: 10
MRID No.: 434124-07
Author: Steven M. Glaza

Reviewer: L.F.
Report No.: HWI 40101014
Report Date: May 13, 1994

Conclusion:
Toxicity Category: Not a sensitizer
Classification: --
Quality Assurance (40 CFR §160.12): Included
Procedure Deviations from §81-6: Yes. See PRS discussion below in PRS recommendations.
Testing Facility: Hazleton Wisconsin, Inc.
Test Material: Raid Product 319, #7869D1.
Positive Control: 2,4-dinitrochlorobenzene (DNCB).

Test Animal: Guinea pig
Age: Young adults
Weight: 382-522 g
Source: Charles Rivers Labs, Inc., Portage, MI.

Test Method: Twenty-eight acclimated male albino guinea pigs were selected and divided into four groups consisting of an irritation screening group of four animals, a test group of 10 animals, a naive control group of 10 animals, and a positive control group of four animals.

Based on the results of an irritation screening study, undiluted test material was administered as a 0.2-g dose (moistened with deionized water) for the induction phase and for the challenge application.

Induction Phase: On the day of test material application, the hair was removed from the backs of each animal in the test and positive control group with electric clippers. The test material was applied to each animal in the test group by placing 0.2 g (moistened with deionized water) on an adhesive patch and placing the patch on the induction site along the dorsal anterior left quadrant. The patch was covered with dental dam and overwrapped with Elastoplast tape. The dressing remained in place for a period of 6 hours after which it was removed and the induction site wiped with a wet disposable paper towel.

The positive control material (DNCB) was administered as a 0.4-mL dose to the positive control animals in the same manner used for the test material with the exception that the positive control sites were rinsed with warm tap water and patted dry with a disposable paper towel after each exposure. The animals in the test and positive control groups received one application per week for 3 weeks for a total of three applications.

Challenge Phase: Two weeks following the administration of the third induction dose, a challenge dose of 0.2 g of test material was administered along the dorsal anterior right quadrant of the test group animals in the same manner as during the induction phase of the study. At this time the 10 naive (previously untreated) control animals were also treated in the same manner with a challenge application of the test material. The positive control material was administered at a concentration of 0.1% w/v in acetone. The method used for the positive control group was the same as that of the test group with the exception that the positive control sites were rinsed with warm tap water and patted dry with a disposable paper towel after completion of the 6-hour exposure.

Results: Clinical Observations and Body Weights: All animals in all groups appeared normal throughout the study. There was no meaningful effect on body weight gain during the study.

Dermal Reactions to Raid Product 319: No dermal reactions were observed in the animals in the test group when administered the test material during the induction phase of the study. Only very faint (nonsensensitization) dermal reactions were elicited from two of the 10 test animals and one of the 10 naive control animals at challenge.

Treatment	No. of negative, very faint, and faint to strong erythema scores[a]	
	Test Material	Positive Control
Induction #1	10, 0, 0	0, 0, 4
Induction #2	10, 0, 0	0, 0, 4
Induction #3	10, 0, 0	0, 0, 4
Challenge	8, 2, 0	0, 0, 4
Naive Control	9, 1, 0	not tested

[a] 24-Hr reading; number of negative (score = 0), very faint erythema (score = 0.5), and faint to strong erythema (score = ≥1); sum of scores is the total number of animals used.

PRS Recommendations

A minimum of 0.4 g of test material should have been used in the test; however, an inadequate quantity of moistened test material (0.2 g) was used. The amount of vehicle used to moisten the test material was not reported. In addition, the guidelines recommend that five test animals be used as positive controls; however, there were only four.

ACUTE TOX ONE-LINER

ID No.: 004822-UGG
DP Barcode: D210139
Chemical: 009501 Benzyl benzoate
Applicant: S.C. Johnson & Son, Inc.
Test Material: Raid Product 319, #7869D1
Date: 10/18/95

G.L. #, Animal, Test Laboratory, Study #, Date	MRID No.	Results	Tox. Cat.	Core Grade
81-1, Rat, Hazleton, HWI 40101010, 04/29/94	434124-03	LD_{50} > 500 mg/kg	III	A
81-2, Rabbit, Hazleton, HWI 40101011, 03/30/94	434124-04	LD_{50} >2000 mg/kg	III	A
81-3, Rat, Bio-Research Labs, #90918, 07/28/94	434361-01	LD_{50} > 2.0 mg/l	IV	A
81-4, Rabbit, Hazleton, HWI 40101013, 04/01/94	434124-05	Irritation cleared in less than 7 days.	III	A
81-5, Rabbit, Hazleton, HWI 40101012, 03/23/94	434124-06	Slight irritation	IV	A
81-6, Guinea Pig, Hazleton, 40101014, 05/13/94	434124-07	Non-sensitizer to guinea pigs	--	A

A = Acceptable