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EYE IRRITATION TEST IN RABBITS OF
[REDACTED]

Haskell Laboratory Report No. 799-85 [REDACTED]

E. I. du Pont de Nemours and Company
Haskell Laboratory for Toxicology and Industrial Medicine
P. O. Box 50, Elkton Road
Newark, Delaware 19714

Date Issued: February 12, 1986

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Eye Irritation Test in Rabbits of
[REDACTED]SUMMARY

[REDACTED] was evaluated for acute eye irritation potential in male rabbits. [REDACTED] produced slight corneal opacity from 1 hour through 2 days in the unwashed eye. No eye irritation was observed in the washed eye throughout the study. Fluorescein examinations were negative at all intervals. The unwashed eye was normal within 3 days after treatment.

Under the conditions of this study, [REDACTED] was a slight eye irritant.

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2/10/86

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JEH:smk:HLR21.5

HLR 799-85

QUALITY ASSURANCE DOCUMENTATION

STUDY: [REDACTED] IRRITATION TEST IN RABBITS OF
R# 15900 [REDACTED]
HLR# 799-85

Because short-term studies are numerous and routine in nature, representative studies from this test type are audited quarterly to ensure the studies are designed and conducted in compliance with the Good Laboratory Practice Standards.

Reported by:

Joseph C. Hamill
Joseph C. Hamill
Quality Assurance Auditor

2/12/86
Date

Haskell Laboratory Report No. 799-85

[REDACTED]
Haskell No. 15,900

Material Tested:

[REDACTED]

Sponsor:

Chemicals and Pigments Department
E. I. du Pont de Nemours and Company
Wilmington, Delaware

Material Submitted By:

[REDACTED]
Chemicals and Pigments Department
E. I. du Pont de Nemours and Company
Jackson Laboratory
Deepwater, New Jersey

Test Facility:

E. I. du Pont de Nemours and Company
Haskell Laboratory for Toxicology and
Industrial Medicine
P. O. Box 50, Elkton Road
Newark, Delaware 19714

Study Initiated - Completed: 8/13/85 - 8/16/85

[REDACTED]

There are 12 pages in this report.

Distribution:

[REDACTED]

INTRODUCTION

The purpose of this study was to evaluate the eye irritation potential of [REDACTED]. This study was conducted according to the applicable EPA Good Laboratory Practice Regulations. Areas of noncompliance are documented in the study records. No deviations existed that significantly affected the validity of the study.

MATERIALS AND METHODS

A. Animal Husbandry

Young adult male New Zealand White rabbits were received from Buckshire Corporation, Perkasie, Pennsylvania. The rabbits were housed singly in suspended, stainless steel, wire-mesh cages. Each rabbit was assigned a unique identification number which was recorded on a card affixed to the cage. Purina Certified Rabbit Chow® #5322 and water were available ad libitum. Rabbits were quarantined, weighed and observed for general health for approximately 2 weeks. Environmental conditions of the rooms were targeted for a temperature of $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and relative humidity of $50\% \pm 10\%$. Any excursions outside these ranges were of brief duration and did not adversely affect the outcome of the study.

B. Protocol

On the day prior to study initiation, the eyes of 2 male New Zealand White rabbits weighing 3126 and 2764 grams were examined using fluorescein dye. Animals showing pre-existing corneal or conjunctival injury or irritation were not used in this study.

A 0.01 ml aliquot of [REDACTED] was introduced into the lower conjunctival sac of the right eyes of 2 male New Zealand White rabbits. The left eyes served as controls. The treated and control eye of one animal remained unwashed. Approximately 20 seconds after the test material was administered, both eyes of the remaining animal were rinsed for one minute with lukewarm tap water.

Approximately 1 and 4 hours and 1, 2 and 3 days after treatment, the rabbits were examined for evidence of eye irritation.

At each observation the treated eyes were examined using an ophthalmoscope and scored for ocular reactions using the Draize scale (presented in Table I). The untreated eye was also examined and used for comparison. Any unusual effects, e.g., pannus, blistering of the conjunctiva, ulceration or other effects indicative of corrosive action

were also noted. Fluorescein dye was used to evaluate corneal ulceration and irritation starting at the 24 hour observation and at each subsequent observation. A sketch was drawn to indicate areas of stain retention.

C. Test Material

Physical Form: Pinkish grey liquid

Purity: [REDACTED]

Composition: [REDACTED]

Synonyms: [REDACTED]

Other Codes: [REDACTED]

CAS Registry No.: [REDACTED]

Stability: The test material was assumed to be stable under the conditions of administration.

D. Records Retention

All raw data and the final report will be stored in the archives of Haskell Laboratory for Toxicology and Industrial Medicine, E. I. du Pont de Nemours and Company, Newark, Delaware or in the Du Pont Hall of Records, Wilmington, Delaware.

RESULTS

[REDACTED] produced slight corneal opacity for 1 hour through 2 days in the unwashed eye. No other eye irritation was present throughout the study. Fluorescein examinations were negative at all intervals and both eyes appeared normal by day 3. Individual eye irritation scores are presented in Tables III and IV.

CONCLUSION

Under the conditions of this study, [REDACTED] was a slight eye irritant.

TABLE 1

DRAZLE¹ SCALE FOR SCORING OCULAR LESIONS

(1) Cornea	
(A) Opacity-degree of density (area most dense taken for reading)	
No opacity	0
Scattered or diffuse area, details of iris clearly visible . .	1
Easily discernible translucent areas, details of iris slightly obscured	2
Opalescent areas, no details of iris visible, size of pupil barely discernible	3
Opaque, iris invisible	4
(B) Area of cornea involved	
One quarter (or less) but not zero	1
Greater than one quarter, but less than half	2
Greater than one half, but less than three quarters	3
Greater than three quarters, up to whole area	4
Score equals A x B x 5	Total Maximum = 80
(2) Iris	
(A) Values	
Normal	0
Folds above normal, congestion, swelling, circumcorneal injection (any or all of these or combination of any thereof) iris still reacting to light (sluggish reaction is positive)	1
No reaction to light, hemorrhage, gross destruction (any or all of these)	2
Score equals A x 5	Total Maximum = 10
(3) Conjunctiva	
(A) Redness (refers to palpebral and bulbar conjunctiva excluding cornea and iris)	
Vessels normal	0
Vessels definitely injected above normal	1
More diffuse, deeper crimson red, individual vessels not easily discernible	2
Diffuse beefy red	3
(B) Chemosis	
No swelling	0
Any swelling above normal (includes nictitating membrane) . .	1
Obvious swelling with partial eversion of lids	2
Swelling with lids about half closed	3
Swelling with lids about half closed to completely closed . .	4

TABLE 1 (Cont'd)DRAIZE SCALE FOR SCORING OCULAR LESIONS

(C) Discharge	
No discharge	0
Any amount different from normal (does not include small amounts observed in inner canthus of normal animals) . . .	1
Discharge with moistening of the lids and hairs just adjacent to lids	2
Discharge with moistening of the lids and hairs, and considerable area around the eye	3
Score equals (A + B + C) x 2	Total Maximum = 20

The maximum total score is the sum of all scores obtained for the cornea, iris and conjunctiva. Total maximum score possible = 110.

¹ Draize, J. H., "Dermal Toxicity." Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics. The Editorial Committee of the Association of Food and Drug Officials of the United States, Austin, Texas, 1959, pp. 46-59.

TABLE II

BIOMICROSCOPE CLASSIFICATIONS OF CORNEAL INJURY
(Bionic of Cornea)

- 0 = No injury; cornea within normal limits.
- Slight (1) = Epithelial changes visible only with biomicroscope (may include localized area of mild injury).
- Mild (2) = Opacity visible with ophthalmoscope or light but showing epithelial changes only with biomicroscope (may include localized area of moderate injury).
- Moderate (3) = Opacity visible with ophthalmoscope or light but showing epithelial and stromal changes with biomicroscope (may include localized area of severe injury).
- Moderate to Severe (4) = Opacity visible with ophthalmoscope or light but showing epithelial and stromal changes and endothelial relucency with unremarkable swelling. This type of injury shows evidence of healing (reversible damage) within 14 days.
- Severe (5) = Opaqueness or opacity visible with ophthalmoscope or light but showing epithelial and stromal changes and endothelial relucency and swelling or other distortion. This type of injury does not show evidence of healing (permanent damage) within 14 days.
- = No biomicroscope evaluation performed.

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- Severe (5) = Opaqueness or opacity visible with ophthalmoscope or light but showing epithelial and stromal changes and endothelial relucency and swelling or other distortion. This type of injury does not show evidence of healing (permanent damage) within 14 days.
- = No biomicroscope evaluation performed.

TABLE IIIEYE IRRITATION REACTIONS OBSERVED IN THE
UNWASHED RABBIT EYE AFTER EXPOSURE TO [REDACTED]

Rabbit Number 19230	1 Hour	4 Hours	1 Day	2 Days	3 Days
Cornea					
Opacity	1	1	1	1	0
Area	4	4	4	1	0
Iris	0	0	0	0	0
Conjunctiva					
Redness	0	0	0	0	0
Chemosis	0	0	0	0	0
Discharge	0	0	0	0	0
Biomic of cornea	-	-	-	-	-

Fluorescein Stain Examinations: negative at all intervals.

TABLE IV

EYE IRRITATION REACTIONS OBSERVED IN THE
WASHED RABBIT EYE AFTER EXPOSURE TO [REDACTED]

Rabbit Number 19231	1 Hour	4 Hours	1 Day	2 Days	3 Days
Cornea					
Opacity	0	0	0	0	0
Area	0	0	0	0	0
Iris	0	0	0	0	0
Conjunctiva					
Redness	0	0	0	0	0
Chemosis	0	0	0	0	0
Discharge	0	0	0	0	0
Biomic of cornea	-	-	-	-	-

Fluorescein Stain Examinations: negative at all intervals.