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

010813

MAR - 3 1994

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Subject: EPA ID # 063503: Aliphatic petroleum hydrocarbons - Review of Ten Acute Toxicity Studies
MRID No.:416853-13 to 416853-22
DP barcode: D195957; D195949; D195950; D195958; D195951; D195959; D195953; D195960; D195961; D195955
PC Code: 063503
Submission No.: S451164; S451155; S451156; S451167; S451158; S451171; S451160; S451174; S451176; S451161
Casewell No.: 632A

From: Paul Chin, Ph.D. Paul Chin 2/18/94
Section 2
Toxicology Branch I
Health Effects Division (H7509C)

To: Kathryn Davis/Bonnie Adler, PM 52
Reregistration Division (H7508W)

Thru: Joycelyn Stewart, Ph.D. K Boyle for 3/1/94
Section Head
Section 2, Toxicology Branch I
Health Effects Division (H7509C)

Registrant: Sun Oil & Refining Co.

CONCLUSIONS:

Ten acute toxicity studies with aliphatic petroleum hydrocarbons were reviewed by the Toxicology Branch I. All studies are classified as acceptable and they satisfy the guideline requirements (81-1), (81-2), (81-3), (81-4), (81-5), and (81-6) for acute oral, dermal, and inhalation toxicity studies, primary eye irritation study, primary dermal irritation study, and dermal sensitization study, respectively.
The summaries of the reviews are shown on the attached table.
[Detailed reviews are appended to this memorandum.]

REQUESTED ACTION:

The Reregistration Division requested that the Toxicology Branch review the above ten acute toxicity studies with aliphatic petroleum hydrocarbons. 1 of 28

010813

ACUTE TOXICITY DATA FOR ALIPHATIC PETROLEUM HYDROCARBONS

Citation	MRID No.	Results	Tox. Categ.	Coregrade
81-1 Acute Oral Species: rat	416853 -13	LD50 >5 g/kg for males and females	IV	acceptable
81-1 Acute Oral Species: rat	416853 -14	LD50 >5 g/kg for males and females	IV	acceptable
81-2 Acute Dermal Species: rat	416853 -15	LD50 >5 g/kg for males and females	IV	acceptable
81-2 Acute Dermal Species: rat	416853 -16	LD50 >5 g/kg for males and females	IV	acceptable
81-4 Primary Eye Irrit. Species: rabbit	416853 -17	Not an eye irritant.	IV	acceptable
81-4 Primary Eye Irrit. Species: rabbit	416853 -18	Not an eye irritant.	IV	acceptable
81-5 Primary Dermal Irrit. Species: rabbit	416853 -19	Slight skin irritant.	IV	acceptable
81-5 Primary Dermal Irrit. Species: rabbit	416853 -20	Slight skin irritant.	IV	acceptable
81-6 Dermal Sensitization Species: guinea pig	416853 -21	Not a dermal sensitizer.	NA	acceptable
81-6 Dermal Sensitization Species: guinea pig	416853 -22	Not a dermal sensitizer.	NA	acceptable

010813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head
Section 2, Tox. Branch 1 (H7509C) 2/5/94

DATA EVALUATION REPORT

STUDY TYPE: Acute Oral (81-1)/Rat

P. C. No: 063503

MRID No: 416853-13

TEST MATERIAL: Paraffinic Oil (150SUS/100°F)

SYNONYMS: API 78-10 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. NO: 1602-D

REPORT TITLE: Acute Oral LD50 Toxicity Study with Paraffinic Oil (150SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Nov. 24, 1980

CONCLUSIONS: Paraffinic Oil (API 78-10) was administered orally by gavage to 5 Sprague Dawley rats per sex per dose level at 5000 mg/kg in an oral acute toxicity study. All animals were free of significant signs of toxicity and no deaths occurred at 5000 mg/kg.

Toxicity category: IV.
Core classification: Acceptable.
LD50 > 5000 mg/kg for males and females.

A: MATERIALS:

1. Test compound: API 78-10, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.84 g/ml.

010813

2. Test animals: Species: Rat, Strain: Sprague-Dawley, Age: young adult (unspecified age), Weight: 200-350 g, Source: Taconic Farms, Germantown, N. Y., Acclimation period: 7 days.

B. METHODS:

- Rats were fasted overnight before dosing.
- Test material was administered orally by gavage at the 5 g/kg level. The dose in grams was calculated by multiplying the specific gravity (0.84 g/ml) times the actual dose received in ml.
- Animals were observed at the time of dosing and twice daily for a total of 14 days.
- Rats were weighed on day 0, 7, and 14.
- Gross necropsy was performed on all survivors which were sacrificed on day 14.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

No clinical signs of toxicity were observed in rats except for two rats who appeared scruffy (shabby) on day 1. Mean body weight was increased in male and female rats throughout the study. All animals were free of abnormalities at necropsy.

No deaths occurred at 5000 mg/kg. Since the guideline allows a limit dose of 5000 mg/kg, a repeat study is not required. The LD50 was > 5000 mg/kg.

C10813

Primary Reviewer: Paul Chin. PhD Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 2/25/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE: Acute Oral (81-1)/Rat

P. C. No: 063503

MRID No: 416853-14

TEST MATERIAL: Paraffinic Oil (70SUS/100°F)

SYNON/MS: API 78-9 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. NO: 1602-D

REPORT TITLE: Acute Oral LD50 Toxicity Study with Paraffinic Oil (70SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Nov. 24, 1980

CONCLUSIONS: Paraffinic Oil (API 78-9) was administered orally by gavage to 5 Sprague Dawley rats per sex per dose level at 5000 mg/kg in an oral acute toxicity study. All animals were free of significant signs of toxicity and no deaths occurred at 5000 mg/kg.

Toxicity category: IV.
Core classification: Acceptable.
LD50 > 5000 mg/kg for males and females.

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.86 g/ml.

2. Test animals: Species: Rat, Strain: Sprague-Dawley, Age: young adult (unspecified age), Weight: 200-300 g, Source: Taconic Farms, Germantown, N. Y., Acclimation period: 7 days.

B. METHODS:

- Rats were fasted overnight before dosing.
- Test material was administered orally by gavage at the 5 g/kg level. The dose in grams was calculated by multiplying the specific gravity (0.86 g/ml) times the actual dose received in ml.
- Animals were observed at the time of dosing and twice daily for a total of 14 days.
- Rats were weighed on day 0, 7, and 14.
- Gross necropsy was performed on all survivors which were sacrificed on day 14.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

No clinical signs of toxicity were observed in rats. Mean body weight was increased in male and female rats throughout the study. All animals were free of abnormalities at necropsy except for one rat with hydronephrosis of the right kidney which is not considered treatment-related.

No deaths occurred at 5000 mg/kg. Since the guideline allows a limit dose of 5000 mg/kg, a repeat study is not required. The LD50 was > 5000 mg/kg.

C10813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 2/4/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE:	Acute Dermal (81-2)/Rabbit
P. C. No:	063503
MRID No:	416853-15
TEST MATERIAL:	Paraffinic Oil (70SUS/100°F)
SYNONYMS:	API 78-9 ; Aliphatic Petroleum Hydrocarbons
SPONSOR:	Sun Refining & Marketing Co., Marcus Hook, PA, 19061
TESTING FACILITY:	Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524
Lab. Proj. NO:	1602-C
REPORT TITLE:	Acute Dermal Toxicity Study in the Rabbit with Paraffinic Oil (70SUS/100°F)
AUTHOR(S):	L. S. Beck
REPORT ISSUED:	Nov. 24, 1980

CONCLUSIONS: Paraffinic Oil (API 78-9) was administered dermally to 4 rabbits per sex for 24 hours at 5000 mg/kg. No adverse clinical signs, weight reduction, mortality, or effects at necropsy were detected.

Toxicity category: IV.
Core classification: Acceptable.
LD50 > 5000 mg/kg for males and females.

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.86 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: Unspecified young adult, Weight: 2400-3200 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:

- Twenty-four hours before application of test material, the rabbits were shaved free of hair with an Oster clipper. The shaved area on each animal constituted about 30% of the total body surface area.
- Prior to application of test material, the exposure sites of 4 rabbits (2 male, 2 female) were abraded by making four epidermal incisions with a 18-gauge needle, two parallel to the rabbits' long axis and two perpendicular to the first abrasions. The abrasions, minor incisions through the stratum corneum, were not sufficiently deep to disturb the dermis or to produce bleeding. The remaining four test rabbits (2 male, 2 female) were left unabraded.
- Test material, 5000 mg/kg, was administered dermally to 4 rabbits (2 abraded, 2 unabraded) per sex, the dose in grams was calculated by multiplying the specific gravity (0.86 g/ml) times the actual dose received in ml.
- The test material was applied to gauze sponges backed with plastic wrap to help prevent evaporation of the test material. The sponges and plastic wrap were taped to the shaved area of the rabbits's stomach with porous adhesive tape. The entire trunk was then wrapped with elastic tape to prevent slippage of the patches. The test material remained in contact with the skin for 24 hours. After 24 hours, the bandaging was removed and the skin was wiped with gauze sponges to remove excess test material.
- After dosing, animals were observed twice daily for a total of 14 days.
- Rabbits were weighed at 0, 7, and 14 days following dosing.
- Gross necropsy was performed on all animals that died on study and on all survivors that were sacrificed on day 14.
- Doses given and lethality are presented in the table under results and discussion.
- A control group of 8 rabbits (4 male, 4 female) was treated in a similar manner, but without test material. This group also served as a concurrent control group for Project No. 1602-C and 1616-C.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

No clinical signs were noted in any animal.
All animals gained weight between day 0 and 14.
In the treated rabbits at gross necropsy, one male had heavy pinworm infestation and one female had a liver cyst that are not considered treatment-related. In the control group at gross

necropsy, one female had a liver cyst and the other female had diarrhea.

Both abraded and unabraded animals were employed in this study although abraded animals are not required by Subdivision F guideline 81-2.

This study employed 4 animals (2 abraded and 2 unabraded) per sex instead of 5 animals per sex required by the guideline 81-2. In this case, however, a repeat test is not required based on too few animals because the Agency can adequately determine a Toxicity Category from the data submitted.

The LD50 was > 5000 mg/kg.

010813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 2/7/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE: Primary Eye Irritation (81-4)/Rabbit

P. C. No: 063503

MRID No: 416853-17

TEST MATERIAL: Paraffinic Oil (70SUS/100°F)

SYNONYMS: API 78-9 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. NO: 1602-B

REPORT TITLE: Primary Eye Irritation Study in Rabbits with Paraffinic Oil (70SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Nov. 7, 1980

CONCLUSIONS: Paraffinic Oil (API 78-9, 0.1 ml liquid) was administered to one eye of each of 6 rabbits and observed for 72 hours. Only one animal in the unrinsed group demonstrated slight conjunctival irritation (chemosis) at the 48 hour reading, but the ocular irritation had completed reversed by day 3. The remaining rabbits (5 unrinsed and 3 rinsed) were free of irritation at each of the three readings. The test material is considered non-irritating with a primary eye irritation score of 0.0 at 24 hours.

Toxicity category: IV.
Core classification: Acceptable.

C10813

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars Bioresearch Lab. to be 0.86 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: unspecified young adult, Weight: 3000-5000 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:
- Six rabbits from the primary skin irritation study was used concurrently for this primary eye irritation study.
- Test material (undiluted) was administered at 0.1 ml in one eye of each of 6 rabbits (3 males, 3 females) and remained unwashed. Animals were observed at 24, 48, and 72 hours after dosing, and scored according to the method of Draize (1959).
-Three additional test rabbits (2 males, 1 female) were also dosed with 0.1 ml of undiluted test material and the treated eyes of these rabbits were flushed for one minute with lukewarm water starting 30 seconds after application of the test material.
- Gross necropsy was not performed.
- Fluorescein was used to confirm whether ulceration occurred.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

Only one male rabbit in the unrinsed group demonstrated slight conjunctival irritation chemosis (grade 1) at the 48 hour reading, but the ocular irritation had completely reversed by day 3. The remaining rabbits (5 unrinsed and 3 rinsed) were free of irritation at each of the three readings. The test material is considered non-irritating with a primary eye irritation score of 0.0 at 24 hours.

Although it is not customary for the same group of animals to be used in different toxicity studies, Toxicology Branch does not believe that the integrity of either study was compromised in this instance.
The toxicity category for eye irritation is IV.

010813

Primary Reviewer: Paul Chin. PhD Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head
Section 2, Tox. Branch 1 (H7509C) 2/11/94

DATA EVALUATION REPORT

STUDY TYPE: Primary Eye Irritation (81-4)/Rabbit

P. C. No: 063503

MRID No: 416853-18

TEST MATERIAL: Paraffinic Oil (150SUS/100°F)

SYNONYMS: API 78-10 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. NO: 1602-B

REPORT TITLE: Primary Eye Irritation Study in Rabbits with Paraffinic Oil (150SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Feb. 12, 1981

CONCLUSIONS: Paraffinic Oil (API 78-10, 0.1 ml liquid) was administered to one eye of each of 6 rabbits and observed for 72 hours. Only one animal in the unrinsed group demonstrated slight corneal opacity at the 48 hour reading, but the ocular irritation had completed reversed by day 3. Since no opacities were present at the 24 hour scoring, this irritation was not considered to be related to the test material. The remaining rabbits (5 unrinsed and 3 rinsed) were free of irritation at each of the three readings. The test material is considered non-irritating with a primary eye irritation score of 0.0 at 24 hours.

Toxicity category: IV.
Core classification: Acceptable.

C10813

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars Bioresearch Lab. to be 0.86 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: unspecified young adult, Weight: 3000-5000 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:
- Six rabbits from the primary skin irritation study was used concurrently for this primary eye irritation study.
- Test material (undiluted) was administered at 0.1 ml in one eye of each of 6 rabbits (3 males, 3 females) and remained unwashed. Animals were observed at 24, 48, and 72 hours after dosing, and scored according to the method of Draize (1959).
-Three additional test rabbits (2 males, 1 female) were also dosed with 0.1 ml of undiluted test material and the treated eyes of these rabbits were flushed for one minute with lukewarm water starting 30 seconds after application of the test material.
- Gross necropsy was not performed.
- Fluorescein was used to confirm ulceration or no ulceration.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

Only one female rabbit in the unrinsed group demonstrated slight corneal opacity at the 48 hour reading, but the ocular irritation had completed reversed by day 3. Since no opacities were present at the 24 hour scoring, this irritation was not considered to be related to the test material. The remaining rabbits (5 unrinsed and 3 rinsed) were free of irritation at each of the three readings. The test material is considered non-irritating with a primary eye irritation score of 0.0 at 24 hours.

Although it is not customary for the same group of animals to be used in different toxicity studies, Toxicology Branch does not believe that the integrity of either study was compromised in this instance.

The toxicity category for eye irritation is IV.

010813

Primary Reviewer: Paul Chin, PhD Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 4/7/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE:	Primary Dermal Irritation (81-5)/Rabbit
P. C. No:	063503
MRID No:	416853-19
TEST MATERIAL:	Paraffinic Oil (70SUS/100°F)
SYNONYMS:	API 78-9 ; Aliphatic Petroleum Hydrocarbons
SPONSOR:	Sun Refining & Marketing Co., Marcus Hook, PA, 19061
TESTING FACILITY:	Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524
Lab. Proj. NO:	1602-A
REPORT TITLE:	Primary Dermal Irritation Study in Rabbits with Paraffinic Oil (70SUS/100°F)
AUTHOR(S):	L. S. Beck
REPORT ISSUED:	Nov. 7, 1980

CONCLUSIONS: Paraffinic Oil (API 78-9), 0.5 ml was administered dermally in a dermal irritation study to four 1 inch squares of shaved skin of 3 rabbits per sex and observed at 24 and 72 hours, and at 7 days after test material was removed. Very slight erythema occurred with no edema in all animals during the period of 24 hours after administration. These mild irritation disappeared by 72 hours. The primary irritation index of API 78-9 is 0.6.

Toxicity category: IV
Core classification: Acceptable.
Primary Skin Irritation Rating: A slight primary dermal irritant.

C10813

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.86 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: Unspecified young adult, Weight: 3000-5000 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:

- Six rabbits from the primary eye irritation study was used concurrently for this primary skin irritation study.

- Twenty-four hours before application of test material, the rabbits were shaved free of hair with a Oster clipper.
-A dose of 0.5 ml of undiluted test material was placed on four 1 inch square gauze patches and applied to four test sites, located lateral to the midline of the back and spaced approximately 10 centimeters apart.
- The test sites on the right shoulder and left flank were abraded with the point of a 20-gauge needle, making two abrasions parallel to the long axis of the rabbit and two abrasions perpendicular to the first two. The incisions were deep enough to penetrate the stratum corneum but not disturb the dermis or cause bleeding.
- The test sites on the left shoulder and right flank were left intact.
- The entire trunk was then wrapped with elastic tape to prevent slippage of the patches.
- After the 24 hour dermal exposure period, the sites were wiped with gauze sponges to remove excess test materia, and observed and scored (Draize, 1959) at 24 and 72 hours and at 7 days after test material was removed. Rabbits were not weighed. Gross necropsy was not performed.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

Individual results and irritation grades were presented. At 24 hours, all rabbits (abraded and intact) demonstrated grade 1 erythema (very slight erythema, barely perceptible) and at 72 hours, only one rabbit responded with grade 1 erythema. By day 7, all animals were free of signs of dermal irritation. Edema was not present at any scoring. The primary irritation score of the test material based on the 24 and 72 hour observations was reported to be 0.6 (on a scale of 0 - 8.0).

Although it is not customary for the same group of animals to be used in different toxicity studies, Toxicology Branch does not believe that the integrity of either study was compromised in this instance.

Toxicity category is IV.
Primary Skin Irritation Rating: A slight primary dermal irritant.

C10813

Primary Reviewer: Paul Chin, PhD Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE: Primary Dermal Irritation (81-5)/Rabbit

P. C. No: 063503

MRID No: 416853-20

TEST MATERIAL: Paraffinic Oil (150SUS/100°F)

SYNONYMS: API 78-10 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. No: 1602-A

REPORT TITLE: Primary Dermal Irritation Study in Rabbits with Paraffinic Oil (150SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Dec. 23, 1980

CONCLUSIONS: Paraffinic Oil (API 78-10), 0.5 ml was administered dermally in a dermal irritation study to four 1 inch squares of shaved skin of 3 rabbits per sex and observed at 24 and 72 hours, and at 7 days after test material was removed. Very slight erythema occurred with no edema in all animals during the period of 24 hours after administration. These mild irritation disappeared by 72 hours. The primary irritation index of API 78-9 is 0.6.

Toxicity category: IV
Core classification: Acceptable.
Primary Skin Irritation Rating: A minimal primary dermal irritant.

A: MATERIALS:

1. Test compound: API 78-10, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.84 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: Unspecified young adult, Weight: 3000-5000 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:

- Six rabbits from the primary eye irritation study was used concurrently for this primary skin irritation study.

- Twenty-four hours before application of test material, the rabbits were shaved free of hair with a Oster clipper.
-A dose of 0.5 ml of undiluted test material was placed on four 1 inch square gauze patches and applied to four test sites, located lateral to the midline of the back and spaced approximately 10 centimeters apart.
- The test sites on the right shoulder and left flank were abraded with the point of a 20-gauge needle, making two abrasions parallel to the long axis of the rabbit and two abrasions perpendicular to the first two. The incisions were deep enough to penetrate the stratum corneum but not disturb the dermis or cause bleeding.
- The test sites on the left shoulder and right flank were left intact.
- The entire trunk was then wrapped with elastic tape to prevent slippage of the patches.
- After the 24 hour dermal exposure period, the sites were wiped with gauze sponges to remove excess test materia, and observed and scored (Draize, 1959) at 24 and 72 hours and at 7 days after test material was removed. Rabbits were not weighed. Gross necropsy was not performed.

- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

Individual results and irritation grades were presented. At 24 hours, 4 rabbits demonstrated grade 1 erythema (very slight erythema, barely perceptible) and 2 rabbits demonstrated grade 1 edema. At 72 hours and at day 7, all animals were free of signs of dermal irritation. The primary irritation score of the test material based on the 24 hour observations was reported to be 0.27 (on a scale of 0 - 8.0). No difference was seen between intact and abraded skin scores.

Although it is not customary for the same group of animals to be used in different toxicity studies, Toxicology Branch does not believe that the integrity of either study was compromised in this instance.

Toxicity category is IV.
Primary Skin Irritation Rating: A minimal primary dermal irritant.

010813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE: Dermal Sensitization (81-6)/Guinea Pig

P. C. No: 063503

MRID No: 416853-21

TEST MATERIAL: Paraffinic Oil (150SUS/100°F)

SYNONYMS: API 78-10 ; Aliphatic Petroleum Hydrocarbons

SPONSOR: Sun Refining & Marketing Co., Marcus Hook, PA, 19061

TESTING FACILITY: Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524

Lab. Proj. No: 1602-E

REPORT TITLE: Skin Sensitization Study with Paraffinic Oil (150SUS/100°F)

AUTHOR(S): L. S. Beck

REPORT ISSUED: Feb. 3, 1981

CONCLUSIONS: Paraffinic Oil (API 78-10), 0.5 ml was administered dermally to 10 male guinea pigs in an induction phase and a challenge phase by the Buehler method. No evidence of dermal sensitization was found.

Toxicity category: NA.
Core classification: Acceptable.
API 78-10 is not a dermal sensitizer in the Buehler Test.

A: MATERIALS:

1. Test compound: API 78-10, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.84 g/ml. The positive control, a 0.05 % (w/v) dilution of chlorodinitrobenzene in 70% (v/v) ethanol, was stored in an amber glass jar under refrigeration

throughout the study.

2. Test animals: Species: Guinea pig, Strain: Hartley, Age: Unspecified young adult, Sex: Male, Weight: Unspecified, Source: CAMM Research Inst., Wayne, NJ, Acclimation period: 14 days.

B. METHODS:

- A highest dose (0.5 ml) that was non-irritating was selected from a range-finding study in which 4 doses levels (0.1, 0.5, 1, and 2 mL) were tested: One animal received the 0.1 and 0.5 mL doses at separate sites, the second animal received the 1 mL dose, and the third animal received the 2 mL dose.
- Twenty-four hours before testing, 10 guinea pigs were shaved free of hair with an Oster clipper and depilated with Neet in an area extending from the shoulders to the hips and halfway down either side of the thorax.
- Induction Phase - The test material (0.5 ml) was applied to a one-inch square gauze sponge that was two layers thick and backed by an occlusive plastic wrap. Patches were held in place with conform elastic tape to prevent slippage. The test material was kept in contact with the skin for 6 hours and then removed. At 24 hours after application of the test material, the test sites were scored for edema and erythema. This induction procedure was conducted 3 times over a period of 3 weeks for a total of ten treatments.
- Challenge Phase - 14 days after the final induction exposure, similar procedures were conducted once for 6 hours with each of the 10 guinea pigs from the test group and the positive control group, but on the animal's right side for induction exposure. The sites were read after 24 hours for erythema and edema.
- Gross necropsy was not performed.
- The data was analyzed statistically using the Student's t-test. Statistics were run on the Statistical Package for the Social Sciences (SPSS) program.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS and DISCUSSION:

Table 1 presents the mean erythema and edema scores for induction and challenge phases.

1. Induction scores - API 78-10 caused grade 1 erythema in 2 animals at the treatments 1 and 2. The test material also caused grade 1 erythema in one animal at the treatments 3, 4, and 9. These results mean that the test material caused slight irritation. Edema was not present at any scoring.

2. Challenge scores - During the induction phase no test animal responded to the challenge dose. Therefore, API 78-10 is not a

dermal sensitizer in the Buehler Test. For the positive control group, the mean score for challenge phase (1.10) for erythema was significantly greater than the mean score for induction phase (0.47), therefore, sensitization occurred in the positive control group. There was no edema in the animals used for the positive control.

Table 1. The mean erythema and edema scores for induction and challenge phases in Hartley guinea pig.

	Phase	Mean Score	
		Erythema	Edema
API 78-10	Induction	0.07 *	0
	Challenge	0	0
Positive control	Induction	0.47	0.05 *
	Challenge	1.10	0

* The challenge mean is less than the induction (sensitizing) mean, therefore, non-sensitizing.

C10813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 2/4/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE:	Dermal Sensitization (81-6)/Guinea Pig
P. C. No:	063503
MRID No:	416853-22
TEST MATERIAL:	Paraffinic Oil (150SUS/100°F)
SYNONYMS:	API 78-9 ; Aliphatic Petroleum Hydrocarbons
SPONSOR:	Sun Refining & Marketing Co., Marcus Hook, PA, 19061
TESTING FACILITY:	Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524
Lab. Proj. NO:	1602-E
REPORT TITLE:	Skin Sensitization Study with Paraffinic Oil (70SUS/100°F)
AUTHOR(S):	L. S. Beck
REPORT ISSUED:	Feb. 4, 1981

CONCLUSIONS: Paraffinic Oil (API 78-9), 0.5 ml was administered dermally to 10 male guinea pigs in an induction phase and a challenge phase by the Buehler method. No evidence of dermal sensitization was found.

Toxicity category: NA.
Core classification: Acceptable.
API 78-9 is not a dermal sensitizer in the Buehler Test.

A: MATERIALS:

1. Test compound: API 78-9, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.86 g/ml. The positive control, a 0.05 % (w/v) dilution of chlorodinitrobenzene in 70% (v/v) ethanol, was stored in an amber glass jar under refrigeration

throughout the study.

2. Test animals: Species: Guinea pig, Strain: Hartley, Age: Unspecified young adult, Sex: Male, Weight: Unspecified, Source: CAMM Research Inst., Wayne, NJ, Acclimation period: 14 days.

B. METHODS:

- A highest dose (0.5 ml) that was non-irritating was selected from a range-finding study in which 4 doses levels (0.1, 0.5, 1, and 2 mL) were tested: One animal received the 0.1 and 0.5 mL doses at separate sites, the second animal received the 1 mL dose, and the third animal received the 2 mL dose.
- Twenty-four hours before testing, 10 guinea pigs were shaved free of hair with a Oster clipper and depilated with Neet in an area extending from the shoulders to the hips and halfway down either side of the thorax.
- Induction Phase - The test material (0.5 ml) was applied to a one-inch square gauze sponge that was two layers thick and backed by an occlusive plastic wrap. Patches were held in place with conform elastic tape to prevent slippage. The test material was kept in contact with the skin for 6 hours and then removed. At 24 hours after application of the test material, the test sites were scored for edema and erythema. This induction procedure was conducted 3 times over a period of 3 weeks for a total of ten treatments.
- Challenge Phase - 14 days after the final induction exposure, similar procedures were conducted once for 6 hours with each of the 10 guinea pigs from the test group and the positive control group, but on the animal's right side for induction exposure. The sites were read after 24 hours for erythema and edema.
- Gross necropsy was not performed.
- The data was analyzed statistically using the Student's t-test. Statistics were run on the Statistical Package for the Social Sciences (SPSS) program.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS and DISCUSSION:

Table 1 presents the mean erythema and edema scores for induction and challenge phases.

1. Induction scores - API 78-9 caused grade 1 erythema in one animal at the treatments 3, 4, and 5. The test material also caused grade 1 erythema in 2 animals (at the treatments 7 and 8), in 3 animals (at the treatment 10), and in 4 animals (at the treatments 1 and 9). These results mean that the test material caused slight irritation, however, edema was not present at any scoring.

2. Challenge scores - During the induction phase no test animal responded to the challenge dose. Therefore, API 78-9 is not a dermal sensitizer in the Buehler Test. For the positive control group, the mean score for challenge phase (1.10) for erythema was significantly greater than the mean score for induction phase (0.47), therefore, sensitization occurred in the positive control group. There was no edema in the animals used for the positive control.

Table 1. The mean erythema and edema scores for induction and challenge phases in Hartley guinea pig.

	Phase	Mean Score	
		Erythema	Edema
API 78-9	Induction	0.18 *	0
	Challenge	0	0
Positive control	Induction	0.47	0.05 *
	Challenge	1.10	0

* The challenge mean is less than the induction (sensitizing) mean, therefore, non-sensitizing.

010813

Primary Reviewer: Paul Chin. Ph.D. Paul Chin 2/4/94
Section 2, Tox. Branch 1 (H7509C)
Secondary Reviewer: Joycelyn Stewart, Ph.D., Section Head 2/2/94
Section 2, Tox. Branch 1 (H7509C)

DATA EVALUATION REPORT

STUDY TYPE:	Acute Dermal (81-2)/Rabbit
P. C. No:	063503
MRID No:	416853-16
TEST MATERIAL:	Paraffinic Oil (150SUS/100°F)
SYNONYMS:	API 78-10 ; Aliphatic Petroleum Hydrocarbons
SPONSOR:	Sun Refining & Marketing Co., Marcus Hook, PA, 19061
TESTING FACILITY:	Elars Bioresearch Lab, Inc. Fort Collins, CO, 80524
Lab. Proj. NO:	1602-C
REPORT TITLE:	Acute Dermal Toxicity Study in the Rabbit with Paraffinic Oil (150SUS/100°F)
AUTHOR(S):	L. S. Beck
REPORT ISSUED:	Nov. 24, 1980

CONCLUSIONS: Paraffinic Oil (API 78-10) was administered dermally to 4 rabbits per sex for 24 hours at 5000 mg/kg. No adverse clinical signs, weight reduction, mortality, or effects at necropsy were detected.

Toxicity category: IV.
Core classification: Acceptable.
LD50 > 5000 mg/kg for males and females.

A: MATERIALS:

1. Test compound: API 78-10, Paraffinic Oil. Concentration and stability data of the test material were not provided by the sponsor. The specific gravity of the test material was determined by Elars to be 0.84 g/ml.

2. Test animals: Species: Rabbit, Strain: New Zealand White, Age: Unspecified young adult, Weight: 2200-3200 g at study initiation, Source: Elkhorn Rabbitry, Watsonville, CA, Acclimation period: 14 days.

B. METHODS:

- Twenty-four hours before application of test material, the rabbits were shaved free of hair with an Oster clipper. The shaved area on each animal constituted about 30% of the total body surface area.
- Prior to application of test material, the exposure sites of 4 rabbits (2 male, 2 female) were abraded by making four epidermal incisions with a 18-gauge needle, two parallel to the rabbits' long axis and two perpendicular to the first abrasions. The abrasions, minor incisions through the stratum corneum, were not sufficiently deep to disturb the dermis or to produce bleeding. The remaining four test rabbits (2 male, 2 female) were left unabraded.
- Test material, 5000 mg/kg, was administered dermally to 4 rabbits (2 abraded, 2 unabraded) per sex. The dose in grams was calculated by multiplying the specific gravity (0.84 g/ml) times the actual dose received in ml.
- The test material was applied to gauze sponges backed with plastic wrap to help prevent evaporation of the test material. The sponges and plastic wrap were taped to the shaved area of the rabbits's stomach with porous adhesive tape. The entire trunk was then wrapped with elastic tape to prevent slippage of the patches. The test material remained in contact with the skin for 24 hours. After 24 hours, the bandaging was removed and the skin was wiped with gauze sponges to remove excess test material.
- After dosing, animals were observed twice daily for a total of 14 days.
- Rabbits were weighed at 0, 7, and 14 days following dosing.
- Gross necropsy was performed on all animals that died on study and on all survivors that were sacrificed on day 14.
- Doses given and lethality are presented in the table under results and discussion.
- A control group of 8 rabbits (4 male, 4 female) was treated in a similar manner, but without test material. This group also served as a concurrent control group for Project No. 1602-C and 1616-C.
- A signed and dated Quality Assurance statement was not present.
- A signed and dated GLP statement was present.

C. RESULTS AND DISCUSSION:

No clinical signs were noted in any animal.
All animals gained weight between day 0 and 14.
In the treated rabbits at gross necropsy, one female had diarrhea that is not considered treatment-related. In the

control group at gross necropsy, one female had a liver cyst and the other female had diarrhea.

Both abraded and unabraded animals were employed in this study although abraded animals are not required by Subdivision F guideline 81-2.

This study employed 4 animals (2 abraded and 2 unabraded) per sex instead of 5 animals per sex required by the guideline 81-2. In this case, however, a repeat test is not required based on too few animals because the Agency can adequately determine a Toxicity Category from the data submitted.

The LD50 was > 5000 mg/kg.