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

OFFICE OF PREVENTION,
PESTICIDES AND TOXIC SUBSTANCES

16/SEP/1999

MEMORANDUM

Subject:	EPA Reg. No:	279-3194 Carfentrazone-ethyl 40 DF
	DP Barcodes:	D257713
	Case No:	063268
	PC Code:	128712

From: Masih Hashim, Toxicologist MH
Technical Review Branch
Registration Division (7505C) SCR

To: Dianne Morgan, PM Team 23
Herbicide Branch
Registration Division (7505C)

Applicant: FMC Corporation
1735 Market Street
Philadelphia, PA 19103

FORMULATION FROM LABEL:

Active Ingredient(s):	% by wt.
Carfentrazone-ethyl	40.0
Inert Ingredients	60.0
Total:	100.0

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BACKGROUND: FMC Corporation has submitted a set of six acute toxicity studies (MRID #444190-10 through 15), to support the registration amendments of its product Carfentrazone-ethyl 40 DF, EPA Registration # 279-3194 (279-GROU). These studies were conducted at the Toxicology Laboratory at FMC Corporation, Princeton, NJ. An Agency contractor summarized all the studies, then they were revised and evaluated by TRB.

RECOMMENDATIONS: Each of the six studies is acceptable in accordance with the Sub-Division F guidelines. The toxicology profile for the new product # 279-GROU is as follows:

acute oral toxicity	IV	acceptable
acute dermal toxicity	IV	acceptable
acute inhalation toxicity	IV	acceptable
primary eye irritation	III	acceptable
primary skin irritation	III	acceptable
dermal sensitization	negative	acceptable

LABELING:

ID #: 000279-03194 Carfentrazone-ethyl (F8426) 40DF

AGRICULTURAL USE REQUIREMENTS:

DIRECTIONS FOR USE:

For early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, wear: coveralls over long-sleeved shirt and long pants, socks and chemical resistant footwear and waterproof gloves.

SIGNAL WORD: CAUTION

PRECAUTIONARY STATEMENTS:

Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Wear long-sleeved shirt and long pants, socks and shoes and waterproof gloves.

STATEMENT OF PRACTICAL TREATMENT (SOPT):

IF ON SKIN: Take off contaminated clothing. Rinse skin immediately

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with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advise.

USER SAFETY RECOMMENDATIONS:

Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet

DATA EVALUATION REPORT

CARFENTRAZONE-ETHYL (F8426) 40 DF HERBICIDE

STUDY TYPES: ACUTE ORAL TOXICITY - RAT , MRID 44419010
ACUTE DERMAL TOXICITY - RAT, MRID 44419011
ACUTE INHALATION TOXICITY - RAT, MRID 44419012
PRIMARY EYE IRRITATION - RABBIT, MRID 44419013
PRIMARY DERMAL IRRITATION - RABBIT, MRID 44419014
DERMAL SENSITIZATION - GUINEA PIG, MRID 44419015

SUMMARY: ACUTE TOXICITY ONE-LINERS

Prepared for

Registration Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
1921 Jefferson Davis Highway
Arlington, VA 22202

Prepared by

Chemical Hazard Evaluation Group
Toxicology and Risk Analysis Section
Life Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T. Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader Signature: _____
Date: _____

Quality Assurance:
Donna L. Fefee, D.V.M. Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractor's signatures above.

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DATA REVIEW FOR ACUTE ORAL TOXICITY TESTING (870.1100)

Product Manager: 23
MRID No.: 444190-10

Reviewer: Susan Chang
Study Completion Date: October 6, 1997
Study No.: A97-4689

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Watt, B.A.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder

Species: Rats; CD
Age: Young adult
Weight (fasted): Males: 236-253 g; Females: 200-223 g
Source: Charles River Laboratories

Conclusion:

1. **LD_{50} (mg/kg):**
   Males: > 5000 mg/kg
   Females: > 5000 mg/kg
   Combined: > 5000 mg/kg
2. **The estimated LD_{50} is** > 5000 mg/kg
3. **Tox. Category:** IV **Classification:** Acceptable

Procedure (Deviations): None

Results:

Dosage (mg/kg)[a]	Number of Deaths/Number Tested		
	Males	Females	Combined
5000	0/5	0/5	0/10

[a]administered as 25% w/v test material in tap water

Observations: No animals died during the study. One male had diarrhea three hours after dosing. Most of the rats had oral discharge on the day of dosing. All rats recovered by day 1 and had normal body weight gains.

Gross Necropsy: No gross lesions were noted.

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DATA REVIEW FOR ACUTE DERMAL TOXICITY TESTING (870.1200)

Product Manager: 23
MRID No.: 444190-11

Reviewer: Susan Chang
Study Completion Date: October 6, 1997
Study No.: A97-4688

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Watt, B.A.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder

Species: Rats; Albino, CD
Age: Young adult
Weight: Males: 274-283 g; Females: 243-259 g
Source: Charles River Laboratories

Dermal LD_{50} Testing:

Conclusion:

1. **LD_{50} (mg/kg):**
   Males: > 5000 mg/kg
   Females: > 5000 mg/kg
   Combined: > 5000 mg/kg
2. **The estimated LD_{50} is** > 5000 mg/kg
3. **Tox. Category:** IV **Classification:** Acceptable

Procedure (Deviations): None

Results:

Dosage (mg/kg)[a]	Number of Deaths/Number Tested		
	Males	Females	Combined
5000	0/5	0/5	0/10

[a]test material moistened with 0.5 mL of tap water

Observations: No animals died during the study. No clinical abnormalities and no dermal irritation were observed. All animals had normal body weight gains.

Gross Necropsy: No gross lesions were noted.

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DATA REVIEW FOR ACUTE INHALATION TOXICITY TESTING (870.1300)

Product Manager: 23
MRID No.: 44419012

Reviewer: Susan Chang
Study Completion Date: October 2, 1997
Study No.: A97-4687

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Signorin, J.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder

Species: Rats; Sprague-Dawley Crl:CDBR VAF Plus
Age: Young adult
Weight: Males: 232-243 g; Females: 221-242 g
Source: Charles River Laboratories, Kingston, NY

Conclusion:

1. **LC_{50} (mg/L):**
   Males: > 5.72 mg/L
   Females: > 5.72 mg/L
   Combined: > 5.72 mg/L
2. **The estimated LC_{50} is** > 5.72 mg/L
3. **Tox. Category:** IV **Classification**: Acceptable

Procedure (Deviations): None

Exposure Concentration mg/L (Gravimetrically Determined)	Number of Deaths/Number Tested		
	Males	Females	Combined
5.72	0/5	0/5	0/10

Clinical Observations: Wet material on fur, decreased locomotion, dyspnea, nasal/oral discharge, rales, chromodacryorrhea, and/or chromorhinorrhea were noted from all rats upon removal from the chamber. In addition, decreased feces, abdominal/genital staining, and/or unkempt fur were noted from all rats post exposure with recovery by day 2. All rats had normal body weight gains.

Gross Necropsy Findings: No gross lesions were noted.

Chamber Atmosphere		
Grav. Conc.	MMAD	GSD
5.72 mg/L	2.92 μm[a], 2.77 μm[b]	2.52[a], 2.58[b]

[a]at 117 minutes exposure
[b]at 175 minutes exposure

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Other Information: Approximately 67-70% of particles had an aerodynamic diameter ≤4.1 μm.

Chamber Environment [a]	
Chamber Volume	11 L
Airflow	35.4 LPM
Temperature	65-67°F
Relative Humidity	31-42%[b]

[a]Nose-only
[b]No explanation was given for the low relative humidity.

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DATA REVIEW FOR PRIMARY EYE IRRITATION TESTING (870.2400)

Product Manager: 23
MRID No.: 44419013

Reviewer: Susan Chang
Study Completion Date: October 6, 1997
Study No.: A97-4686

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Watt, B.A.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder
Dosage: 0.1 mL (dry volume)

Species: Rabbits; Albino, New Zealand White
Age: Young adult
Weight: Males: 2.40-2.83 kg; Females: 2.30-2.99 kg
Source: Covance, Denver, PA

Conclusion:
1. **Toxicity Category:** III
2. **Classification:** Acceptable

Procedure (Deviations): None

Observations	Number "positive"/number tested			
	Hours			
	1	24	48	72
	Unwashed eyes			
Corneal Opacity	0/6	1/6	0/6	0/6
Iritis	0/6	0/6	0/6	0/6
Conjunctivae:				
Redness	1/6	0/6	0/6	0/6
Chemosis	0/6	0/6	0/6	0/6
Discharge	6/6	0/6	0/6	0/6

Summary: Within 24 hours after test material instillation, 1/6 rabbits exhibited corneal opacity with resolution by 48 hours. No iritis or positive chemosis was noted on any rabbits. Positive conjunctival redness was noted on 1/6 rabbits at one hour with resolution by 24 hours. Conjunctival discharge (grades 2 or 3) was noted on 6/6 rabbits at one hour with resolution by 24 hours.

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DATA REVIEW FOR PRIMARY DERMAL IRRITATION TESTING (870.2500)

Product Manager: 23
MRID No.: 444190-14

Reviewer: Susan Chang
Study Completion Date: October 6, 1997
Study No.: A97-4690

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Watt, B.A.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder
Dosage: 0.5 g (moistened with 0.5 mL of tap water)

Species: Rabbits; Albino, New Zealand White
Age: Young adult
Weight: males: 2.15-2.42 kg; Females: 2.07-2.37 kg
Source: Covance, Denver, PA

Conclusion:

1. **Toxicity Category:** III (Moderate irritant)
2. **Classification**: Acceptable

Procedure (Deviations): None

Results: PDIS = 0.04 (Essentially nonirritating). One hour after patch removal, moderate erythema was noted on 1/6 rabbits. The erythema slowly resolved by day 5. Desquamation was noted on this rabbit at 72 hours with clearance by day 12. The other five rabbits had no irritation throughout the study.

DATA REVIEW FOR DERMAL SENSITIZATION TESTING (870.2600)

Product Manager: 23
MRID No.: 444190-15

Reviewer: Susan Chang
Study Completion Date: October 6, 1997
Study No.: A97-4691

Testing Facility: FMC Corporation, Toxicology Laboratory
Author: Watt, B.A.

Quality Assurance (40 CFR §160.12): Included

Test Material: Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder
Positive Control Material: 1-Chloro-2,4-dinitrobenzene (DNCB)

Species: Guinea pigs; Albino, Hartley
Age: Young adult
Weight: Males: 300-438 g
Source: Covance, Denver, PA

Method: Buehler

Conclusion:

1. **There is no indication that this product is a dermal sensitizer.**
2. **Classification**: Acceptable

Procedure (Deviations from §81-6): None

Procedure: For the induction phase, 0.5 g of the test material moistened with 0.5 mL of tap water was applied under occlusion for approximately six hours once each week for three weeks. Fourteen days later, the animals were challenged with 0.5 g of the test material (assumed that the test material was moistened with 0.5 mL of tap water) under occlusion at naive sites for approximately 6 hours. A naive control group was treated with 0.5 g of the test material (assumed that the test material was moistened with 0.5 mL of tap water) at challenge only. Reactions were scored 24 and 48 hours post exposure.

Results: No reaction was noted on any animals at induction or challenge.

The study report included a DNCB positive control study which was carried out within six months of the study. The results were appropriate.

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ACUTE TOX ONE-LINERS

1. **DP BARCODE:** D257713
2. **PC CODE:** 128712
3. **CURRENT DATE:** Sept 15, 1999
4. **TEST MATERIAL:** Carfentrazone-ethyl (F8426) 40 DF Herbicide [40.2% Carfentrazone-ethyl (F8426)]; Reference No. PL97-653; brown powder

Study/Species/Lab Study #/Date	MRID	Results	Tox. Cat.	Core Grade
Acute oral toxicity rat/ FMC Corporation, A97-4689/10-6-97	444190-10	LD_{50} > 5000 mg/kg (males, females, combined)	IV	A
Acute dermal toxicity rat/FMC Corporation, A97-4688/10-6-97	444190-11	LD_{50} > 5000 mg/kg (males, females, combined)	IV	A
Acute inhalation toxicity rat/FMC Corporation, A97-4687/10-2-97	444190-12	LC_{50} > 5.72 mg/L (males, females, combined)	IV	A
Primary eye irritation rabbit/FMC Corporation, A97-4686/10-6-97	444190-13	Corneal opacity on 1/6 rabbits at 24 hours after test material instillation with resolution by 48 hours; conjunctival redness and discharge on 1/6 and 6/6 rabbits, respectively, at one hour with resolution by 24 hours.	III	A
Primary dermal irritation rabbit/FMC Corporation, A97-4690/10-6-97	444190-14	No irritation on 5/6 rabbits; moderate erythema on 1/6 rabbits at 1 hour; reduced to well defined by 24 hours; persisted through 72 hours then reduced to slight by day 4 with resolution by day 5; desquamation on this rabbit by 72 hours with clearance by day 12.	III	A
Dermal sensitization guinea pig/FMC Corporation, A97-4691/10-6-97	444190-15	Not a sensitizer	–	A

Core Grade Key: A =Acceptable, S = Supplementary, U = Unacceptable, V = Self Validated

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