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HEALTH EFFECTS DIVISION  
SCIENTIFIC DATA REVIEW  
EPA SERIES 361

CASWELL FILE

12887<sup>e</sup>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

005540

OCT 20 1986

MEMORANDUM

SUBJECT: FMC 54800 100 g/l EC

TO: Mr. George LaRocca, PM 15  
Registration Division (TS-767C)

FROM: Byron T. Backus, Toxicologist  
Toxicology Branch (TS-769C)

*Byron T. Backus*  
*10/06/86*

THROUGH: Marcia van Gemert, Ph.D.  
Section Head, Review Section III  
Toxicology Branch (TS-769C)

*M. van Gemert*  
*10.9.86*

and

Theodore M. Farber, Ph.D.  
Branch Chief  
Toxicology Branch (TS-769C)

*Theodore M. Farber*  
*10/12/86*

EPA Reg. No. 279-3056

Project No. 1214

Tox. Chem. 463F

Action Requested:

The Registration Division has requested a toxicology review of acute oral LD<sub>50</sub>, acute dermal LD<sub>50</sub>, acute inhalation LC<sub>50</sub>, primary dermal irritation, dermal sensitization and primary eye irritation studies on a formulation containing 11.6% of the active ingredient.

Conclusions and Recommendations:

1. All of the submitted studies are acceptable and have been classified as core-minimum data.
2. In terms of its acute hazard potential the product has been categorized as follows:

- Acute oral LD<sub>50</sub> - toxicity category II
- Acute dermal LD<sub>50</sub> - toxicity category III
- Acute inhalation LC<sub>50</sub> - toxicity category III
- Primary dermal irritation - toxicity category IV
- Dermal Sensitization - potential sensitizer
- Primary eye irritation - toxicity category I

Data Evaluation Reports (attached):

1. Freeman, C., Rand, G. M. and Norvell, M. J. Acute Oral Toxicity of FMC 54800, 100 g/l EC in Rats. Unpublished study conducted at the FMC Toxicology Laboratory; dated 10-10-83. Received at EPA 10-3-85; in Acc. 260449.
2. Freeman, C., Rand, G. M. and Norvell, M. J. Acute Dermal Toxicity of FMC 54800, 100 g/l EC in Rabbits. Unpublished study conducted at the FMC Toxicology Laboratory; dated 9-21-83. Received at EPA 10-3-85; in Acc. 260449.
3. Maedgen, J. L. Rat Acute Inhalation Toxicity FMC 54800 100 g/l EC. Unpublished study conducted at Stillmeadow Inc; dated 2-16-84. Received at EPA 10-3-85; in Acc. 260449.
4. Freeman, C., Rand, G. M. and Norvell, M. J. Primary Skin Irritation of FMC 54800, 100 g/l EC in Rabbits. Unpublished study conducted at the FMC Toxicology Laboratory; dated 9-30-83. Received at EPA 10-3-85; in Acc. 260449.
5. Freeman, C., Rand, G. M. and Norvell, M. J. Skin Sensitization of FMC 54800, 100 g/l EC in Guinea Pigs. Unpublished study conducted at the FMC Toxicology Laboratory; dated 10-10-83. Received at EPA 10-3-85; in Acc. 260449.
6. Freeman, C., Rand, G. M. and Norvell, M. J. Primary Eye Irritation of FMC 54800, 100 g/l EC in Rabbits. Unpublished study conducted at the FMC Toxicology Laboratory; dated 9-30-83. Received at EPA 10-3-85; in Acc. 260449.

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DATA EVALUATION REPORT I

STUDY TYPE: Acute Oral LD<sub>50</sub> - Rat TOX. CHEM. NO.: 463F

ACCESSION NUMBER: 260449 MRID NO.: not given

TEST MATERIAL: FMC 54800 100 g/l EC

SYNONYMS: Bifenthrin, Talstar, FMC 54800

STUDY NUMBER(S): A83-1054

SPONSOR: FMC Corporation

TESTING FACILITY: FMC Toxicology Laboratory

TITLE OF REPORT: Acute Oral Toxicity of FMC 54800, 100 g/l EC  
in Rats

AUTHOR(S): Freeman, C., Rand, G. M. and Norvell, M. J.

REPORT ISSUED: 10 October 1983

CLASSIFICATION: core-minimum

CONCLUSIONS:

1. The study is acceptable in defining the following oral LD<sub>50</sub> levels in Sprague-Dawley rats for this formulation:

Males:	573 mg/kg with 95% C.L. of 488-658 mg/kg
Females:	520 mg/kg with 95% C.L. of 463-577 mg/kg
Combined sexes:	531 mg/kg with 95% C.L. of 484-577 mg/kg

2. Because of uncertainties as indicated by the 95% confidence limits, as well as the level of mortalities (combined sexes: 60%) at a dosage level of 500 mg/kg, this formulation is classified as toxicity category II by the oral exposure route (oral LD<sub>50</sub> between 50 and 500 mg/kg) and should be labeled accordingly.

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A. MATERIALS:

1. Test material: FMC 54800 100 g/l EC, Description: a yellow liquid containing 11.6% of the active ingredient, pH 4.70. Lot # PL-83-49.
2. Test animals: Species: rat, Strain: Sprague-Dawley, Age "young," Weight: males: 206-300 gm; females: 200-258 gm. Source: Taconic Farms, Germantown, NY.

B. STUDY DESIGN:1. Animal assignment

Animals were assigned using a computer-generated table of random numbers to the following dosage groups:

<u>Dose Level mg/kg</u>	<u>No. of males tested</u>	<u>No. of females tested</u>
400	10	-
450	10	10
500	10	10
550	10	10
600	10	10
650	10	10
700	10	-
800	10	-

2. Test material preparation

The test material was administered as a 10% w/v solution in corn oil. The specific gravity of the test material was 0.94 g/ml.

3. Test material administration

Rats were fasted overnight. The test material was introduced directly into the stomach of each animal using a straight, 13 gauge stainless steel dosing needle.

4. Statistics

LD<sub>50</sub> calculations were performed using a TI-59 (TI-59?) Logit Linear Regression Program modified for a Hewlett-Packard Model 16 computer.

5. Quality assurance

A quality assurance statement is provided on page 2 of the report, signed by William D. Barta on 10/4/83.

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C. METHODS AND RESULTS:1. Observations

Animals were inspected for signs of toxicity and mortality at 0.5, 1, 2, 3, 4 and 6 hours on the day of dosing and twice daily afterwards until day 14 when they were observed once.

Toxicity

Symptoms were clonic convulsions, tremors, chromodacryorrhea, chromorhinorrhea and abdominogenigenital staining. Signs of toxicity began (were present?) at 6 hours after dosage, and continued to be present until day 6, at which time all survivors had returned to normal (p. 6). According to information on p. 1 recovery was essentially complete within 48 hours of dosage. Even in the one group in which there was no mortality (males at 400 mg/kg) 9/10 animals had tremors on day 1.

Mortality (survival)

Some mortality occurred in all groups, with the exception of males at 400 mg/kg:

Dose Level mg/kg	males-mortality /rats dosed	females-mortality /rats dosed
400	0/10	-
450	1/10	3/10
500	7/10	5/10
550	4/10	5/10
600	7/10	7/10
650	6/10	8/10
700	5/10	-
800	8/10	-

All deaths occurred within 2 days of dosing.

2. Body weight

Animals were weighed at 0, 7 and 14 days.

All survivors are reported (p. 6) as having gained weight by the end of the study. While some groups, particularly among males, appeared to have greater mean body weight gains than others, there were considerable differences in initial mean body weights

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between groups (more so among males than females) at day 0. With this factor considered, it does not appear that there was any significant dose-related effect on body weight gains on day 14.

### 3. Necropsies

Gross necropsies were performed on all animals which died during the study. Survivors were asphyxiated with CO<sub>2</sub> on day 14 and necropsied.

#### Results

The only internal gross necropsy finding among the rats which died was blood in the intestines. This occurred in 8 rats, with a distribution as follows:

Dose Level mg/kg	males # with blood in intestines/num- ber of mortali- ties	females # with blood in intestines/num- ber of mortali- ties
400	-	-
450	0/1	0/3
500	0/7	0/5
550	0/4	2/5
600	1/7	2/7
650	0/6	2/8
700	1/5	-
800	0/8	-

All rats which were sacrificed at 14 days were normal on necropsy.

### D. DISCUSSION:

While it would have been appropriate to have additional data from doses lower than those administered (particularly from the females, which had 30% mortality at the lowest dose, 450 mg/kg, at which they were tested), the oral LD<sub>50</sub> is sufficiently defined by this study for regulatory purposes. However, because 95% confidence limits for the oral LD<sub>50</sub> include values below 500 mg/kg the product is classified in toxicity category II by the oral exposure route.

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Section 3, Tox. Branch (TS-769C)  
Secondary reviewer: Marcia van Gemert, Ph.D., Section Head  
Section 3, Tox. Branch (TS-769C)

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M. van Gemert 10.9.86

DATA EVALUATION REPORT II

STUDY TYPE: Acute Dermal LD<sub>50</sub> - Rat                      TOX. CHEM. NO.: 463F  
ACCESSION NUMBER: 260449                                      MRID NO.: not given  
TEST MATERIAL: FMC 54800 100 g/l EC  
SYNONYMS: Bifenthrin, Talstar, FMC 54800  
STUDY NUMBER(S): A83-1055  
SPONSOR: FMC Corporation  
TESTING FACILITY: FMC Toxicology Laboratory  
TITLE OF REPORT: Acute Dermal Toxicity of FMC 54800, 100 g/l EC  
in Rabbits  
AUTHOR(S): Freeman, C., Rand, G. M. and Norvell, M. J.  
REPORT ISSUED: 21 September 1983  
CLASSIFICATION: core-minimum  
CONCLUSIONS:

1. The study is acceptable in defining a dermal LD<sub>50</sub> of greater than 2000 mg/kg in rabbits, with no mortalities having occurred at this dosage level.
2. The formulation is no worse than toxicity category III (dermal LD<sub>50</sub> > 2 gm/kg) in terms of its dermal toxicity.



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A. MATERIALS:

1. Test material: FMC 54800 100 g/l EC, Description: a yellow liquid containing 11.6% of the active ingredient, pH 4.70. Lot # PL-83-49.
2. Test animals: Species: rabbit, strain: New Zealand white rabbits, Age "young," Weight: males: 2.31-2.69 kg; females: 2.26-2.57 kg. Source: Davidson's Mill Farm, Jamesburg, NJ.

B. STUDY DESIGN:1. Animal assignment

"Rabbits were randomized into their cages from the shipping boxes using a computer generated table of random numbers" (perhaps a bit superfluous, as there was only one dosage group).

2. Test material preparation

The test material was administered as undiluted. The specific gravity of the test material was 0.94 g/ml.

3. Test material administration

The test material was introduced under a 4" x 4" gauze pad taped to the animal. The test site was the occluded with plastic sheeting for 24 hours; during which each rabbit wore an everted Elizabethan collar. Exposure was for 24 hours. There were 5 rabbits/sex at the one dose administered (2 gm/kg).

4. Statistics

There is no indication that any statistical calculations were done (or that they were even necessary).

5. Quality assurance

A quality assurance review statement is provided on page 2 of the report, signed on 9/8/83 and 9/12/83.

C. METHODS AND RESULTS:1. Observations

Rabbits were observed for signs of toxicity and mortality at 0.5, 1, 2, 3, 4 and 6 hours on the day of dosing and twice daily afterwards until day 14 when

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Toxicity

There were no symptoms of systemic toxicity that could be ascribed to exposure to the test material. One female was sacrificed on day 3 because of a broken leg (presumably this was the animal for which the observation "locomotion decreased" was made on days 1-2 after treatment). Local irritation at the application site consisted of dehydration and blanching, followed by (on day 7) eschar formation, and fissuring and exfoliation in some animals. On day 14 all rabbits are reported (p. B-1) as exhibiting eschar formation and exfoliation at test sites.

Mortality (survival)

One female was sacrificed on day 3 with a broken leg, but this "was judged not to be attributable to the test material."

2. Body weight

Animals were weighed at 0, 7 and 14 days.

Results

All rabbits had slight weight losses (from 0.12 to 0.29 kg) from initial weights by day 14. It is noted (p. 5) that a slight loss of weight is common in rabbits which are restrained with Elizabethan collars (however, many rabbits showed weight losses for the period between day 7 and 14).

3. Sacrifice and necropsies

The rabbits were sacrificed with T-61 euthanizing solution on day 14 and were necropsied.

Results

In the 9 rabbits which survived for 14 days there were no internal gross lesions. The only finding reported is the broken leg for the female sacrificed on day 3.

D. DISCUSSION:

The study adequately defines a rabbit dermal LD<sub>50</sub> > 2 gm per kg. The information is sufficient to classify the formulation as being no worse than toxicity category III by this exposure route.

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Secondary reviewer: Marcia van Gemert, Ph.D., Section Head  
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*M. van Gemert 10.9.86*

DATA EVALUATION REPORT III

STUDY TYPE: Acute Inhalation LC<sub>50</sub> - Rat      TOX. CHEM. NO.: 463F  
ACCESSION NUMBER: 260449      MRID NO.: not given  
TEST MATERIAL: FMC 54800 100 g/l EC  
SYNONYMS: Bifenthrin, Talstar, FMC 54800  
STUDY NUMBER(S): FMC No. A83-1045; Project No. 3050-83  
SPONSOR: FMC Corporation  
TESTING FACILITY: Stillmeadow, Inc. 9525 Town Park Drive, Houston  
TITLE OF REPORT: Rat Acute Inhalation Toxicity FMC 54800, 100 g/l EC  
AUTHOR(S): Maedgen, J. L.  
REPORT ISSUED: 16 February 1984  
CLASSIFICATION: core-minimum

CONCLUSIONS:

1. The study is acceptable in defining a 4-hr inhalation LC<sub>50</sub> (combined males and females) of 4.94 mg/l (95% C.L. of 4.60 - 5.31 mg/l) for the formulation.
2. This formulation is in toxicity category III (for which the criterion is a 4-hr inhalation LC<sub>50</sub> between 0.5 and 5 mg/l) by the inhalation exposure route.

A. MATERIALS:

1. Test material: FMC 54800 100 g/l EC, Description: a clear yellow liquid containing 11.6% of the active ingredient, stable at room temperature. Lot # PL-83-49.
2. Test animals: Species: rat, strain: TAS:(SD), Age: "young adult." Weight: males: 210-295 gm; females: 175-200 gm. Source: Texas Animal Specialties, Humble, TX.

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B. STUDY DESIGN:1. Animal assignment

No indication is given as to the method of assignment. "Five males and five females per each of five exposure levels were selected for testing."

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<u>Dose Level</u> mg/l	<u>No. of</u> males tested	<u>No. of</u> females tested
2.20	5	5
4.27	5	5
4.59	5	5
5.51	5	5
5.84	5	5

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2. Test material preparation

Exposure was to an aerosol generated by pumping undiluted test material through a pressure operated air nozzle. This concentrated aerosol was then diluted with dry filtered air and drawn into the exposure chamber.

3. Test material administration

During exposure the rats were individually housed in stainless steel cages within a 200 liter stainless steel dynamic flow inhalation chamber. A maximum of ten rats were exposed during any one given exposure period. The concentration of test material in the chamber was determined analytically (by gas chromatograph) at least twice per hour and nominally at the end of each exposure.

4. Computations and statistics

The LC<sub>50</sub> was calculated using the method of Litchfield and Wilcoxon, computed on a 48K Apple II Plus Computer. Particle size distributions (as well as mass median aerodynamic diameters and geometric standard deviations) were also calculated (reference: Finney, D.J. Probit Analysis, 3rd ed., chapters 3 and 4, 1971) on a 48K Apple II Plus Computer.

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5. Quality assurance

There are two quality assurance statements in this report, one on the second page (signed by Elizabeth J. Sabol of Stillmeadow, Inc. and dated February 16, 1984), the other on page 3, signed by Debbie L. Ruoff and Walter L. Bullock of FMC, and dated February 23, 1984.

C. METHODS AND RESULTS:1. Observations

Because of the chamber design, only 4 rats (out of 10) could be observed during the exposure period. Observations for mortality and signs of toxicity were made "frequently" on the day of exposure and "at least once daily" for the next 14 days.

Toxicity

Symptoms were "activity decrease, aggression, alopecia, body tremors, constricted pupils, chromodacryorrhea, convulsions, cyanosis, diarrhea, dilated pupils, emaciation, epistaxis, gasping, head cocked to the right, lacrimation, loss of righting reflex, nasal discharge, piloerection, polyuria, respiratory gurgle, ptosis, salivation, sensitivity to touch, swollen face, swollen neck, and unusual hindlimb extension." The respiratory gurgle sometimes appeared several days after exposure, and, in the case of a few rats, persisted through day 12.

Mortality (survival)

Dose Level mg/l	males-mortality /rats exposed	females-mortality /rats exposed
2.20	0/5	0/5
4.27	0/5	2/5
4.59	1/5	0/5
5.51	4/5	5/5
5.84	4/5	5/5

All deaths occurred within 5 days of exposure.

Inhalation LC<sub>50</sub> (males) = 5.158 mg/l with 95% C.L. of 4.494 to 5.92 mg/l.

Inhalation LC<sub>50</sub> (males and females combined) = 4.943 mg/l with 95% C.L. of 4.599 to 5.314 mg/l.

(In both cases the results from 2.2 mg/l were not used in calculations because it was lower than the LD<sub>01</sub>).

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2. Body weight

Animals were weighed at 0, 7 and 14 days.

Results

Even at the lowest exposure level (2.20 mg/l) there were mean weight losses for both males and females in the 7 days following exposure. Although the mean weight for 2.2 mg/l males on day 14 was the same as the preexposure value, this was because a single male had a rather precipitous weight loss (from 255 to 190 grams) over the 14-day observation period. All other males gained weight.

From table 1:

Mean survivor\* weights:

## Males

Dose level	Number of Survivors	Mean Weight (gm)		
		Day 0	Day 7	Day 14
2.20 mg/l	5	234	228	234
4.27 mg/l	5	247	202	253
4.59 mg/l	4	249	203	258
5.51 mg/l	1	250	220	260
5.84 mg/l	1	285	235	270

## Females

Dose level	Number of Survivors	Mean Weight (gm)		
		Day 0	Day 7	Day 14
2.20 mg/l	5	191	181	191
4.27 mg/l	3	195	168	187
4.59 mg/l	5	199	177	204
5.51 mg/l	0	-	-	-
5.84 mg/l	0	-	-	-

\*Means for day 0 and day 7 are only for those rats which survived to day 14.

3. Necropsies

Gross necropsies were performed on all animals which died during the study. Survivors were sacrificed (method not reported) on day 14 and necropsied.

Results

Rats which died during the 14-day observation period had findings which included signs of polyuria, salivation, lacrimation, nasal discharge, lungs red and/or edematous, hemorrhagic areas in large intestine, liquid or sediment

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in stomach, liquid or paste in small intestine, face swollen, yellow discharge from penis. While there were no observable abnormalities in many of the rats which survived for 14 days (and there were no effects noted in rats which had been exposed to 2.20 mg/l), some of the rats in higher exposure groups had such findings as "red patches on lungs," "lungs mottled pink and red," thin blue-gray film covering part of the lungs, along with signs of alopecia around the nose and/or jaw. 005540

#### 4. Particle size

"Particle size determinations were made once during the first half and once during the second half of each exposure by using an Andersen cascade impactor." Since the test material was volatile, gravimetric determinations were not done.

#### Results

Approximately 90% (by weight) of the particulates in each run were below 10 micrometers.

<u>Exposure level</u>	<u>Mass Median Aerodynamic Diameter</u>	<u>Geometric Standard Deviation</u>
2.20 mg/l	2.204 um	2.287
4.27 mg/l	2.090 um	2.479
4.59 mg/l	2.260 um	2.422
5.51 mg/l	2.848 um	2.141
5.84 mg/l	2.232 um	2.537

#### D. DISCUSSION:

While there are some flaws in the reporting of this study (it is not indicated how animals were sacrificed at 14 days; there is no information as to which specific rats within a group showed what symptoms, which might then be correlated with necropsy findings), the data adequately define an inhalation LC<sub>50</sub> for this particular formulation. Since the LC<sub>50</sub> value for combined males and females is 4.943 mg/l (4-hr exposure) this formulation is in toxicity category III by this exposure route.

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Secondary reviewer: Marcia van Gemert, Ph.D., Section Head  
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DATA EVALUATION REPORT IV

STUDY TYPE: Acute Dermal Irritation Rabbit TOX. CHEM. NO.: 463F

ACCESSION NUMBER: 260449 MRID NO.: not given

TEST MATERIAL: FMC 54800 100 g/l EC

SYNONYMS: Bifenthrin, Talstar, FMC 54800

STUDY NUMBER(S): A83-1056

SPONSOR: FMC Corporation

TESTING FACILITY: FMC Toxicology Laboratory

TITLE OF REPORT: Primary Skin Irritation of FMC 54800, 100 g/l EC  
in Rabbits

AUTHOR(S): Freeman, C., Rand, G. M. and Norvell, M. J.

REPORT ISSUED: 30 September 1983

CLASSIFICATION: core-minimum

CONCLUSIONS:

1. The study is acceptable as core minimum data.
2. The study adequately defines a low level of irritation potential by the dermal exposure route, for which this formulated product is in toxicity category IV.

A. MATERIALS:

1. Test material

FMC 54800 100 g/l EC, Description: a yellow liquid containing 11.6% of the active ingredient, stored at room temperature. Lot # PL-83-49.

2. Test animals

Species: rabbit, strain: New Zealand white, Age: "young," Weight: 2.12-2.49 kg. Source: Davidson's Mill Farm, Jamesburg, NJ.



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**B. STUDY DESIGN:****1. Animal assignment**

"On the day prior to test material administration six rabbits (3 male, 3 female), weighing from 2.12 to 2.45 kg were selected for the study."

**2. Test material preparation**

The test material was administered undiluted. The specific gravity of the test material was 0.94 g/ml.

**3. Test material administration**

0.5 ml of test material was introduced under each of 2 2" x 2" gauze pads (one covering an intact, the other an abraded site) on each of the six animals, with the entire trunk of each animal wrapped with a semi-occlusive gauze bandage during the 4-hour exposure period. Animals were fitted with Elizabethan collars, which they wore until study termination to prevent ingestion of test material.

**4. Quality assurance**

A quality assurance review statement is provided on page 3 of the report, signed by William D. Barta on 9/28/83 and by Walter L. Bullock on 9/29/83.

**C. METHODS AND RESULTS:****Observations**

The application sites were scored (method of Draize) approximately 30 minutes after the wrappings were removed, and daily thereafter through day 14.

**Results**

At 24, 48 and 72 hrs there was slight erythema (maximum score = 1) at some sites on some rabbits. There was no edema. The PDIS (average of scores for days 1 and 3) was 0.83. "At termination on day 14, all rabbits had either eschar, exfoliation, dehydration or desquamation." The mean irritation score on day 14 was 0.67.

**D. DISCUSSION:**

The study adequately defines a low level of irritation potential by this exposure route for which this product is in toxicity category IV.

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DATA EVALUATION REPORT V

STUDY TYPE: Dermal Sensitization - Guinea Pigs TOX. CHEM. NO.: 463F

ACCESSION NUMBER: 260449

MRID NO.: not given

TEST MATERIAL: FMC 54800 100 g/l EC

SYNONYMS: Bifenthrin, Talstar, FMC 54800

STUDY NUMBER(S): A83-1058

SPONSOR: FMC Corporation

TESTING FACILITY: FMC Toxicology Laboratory

TITLE OF REPORT: Skin Sensitization of FMC 54800, 100 g/l EC  
in Guinea Pigs

AUTHOR(S): Freeman, C., Rand, G. M. and Norvell, M. J.

REPORT ISSUED: 10 October 1983

CLASSIFICATION: core-minimum

CONCLUSIONS:

1. The study is acceptable in demonstrating that this formulation is a potential dermal sensitizer in humans.
2. The precautionary labeling for this product should include a statement indicating the dermal sensitization hazard.

A. MATERIALS:

1. Test material

FMC 54800 100 g/l EC, Description: a yellow liquid containing 11.6% of the active ingredient, stored at room temperature. Lot # PL-83-49. pH 4.70.

2. Positive control

1-Chloro-2,4-dinitrobenzene (DNCB): lot no. D9E.

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### 3. Test animals

Species: guinea pig, strain: Hartley, Age: "young adult male." Weight: 321-468 grams. Source: Davidson's Mill Farm, Jamesburg, NJ.

## B. STUDY DESIGN:

### 1. Animal assignment

"Guinea pigs were randomized into their cages from the shipping boxes using a computer generated table of random numbers."

### 2. Test material preparation

The test material was administered as a 50% (w/v) solution in diethyl ether. The positive control material (DNCB) was applied as a 0.15% (w/v) solution in ethanol.

### 3. Test material administration

"One half milliliter of test material solution was applied to each of 10 Hilltop Chambers<sup>®</sup> and moistened with physiological saline. In addition, one half milliliter of 0.15% DNCB in ethanol was applied to each of 10 chambers to be administered to the positive control group. The chambers were applied to the test sites and the entire trunk of the animal was wrapped with an occlusive, elastic bandage... Six hours later the wrappings and chambers were removed and the test sites were wiped with clean gauze. The guinea pigs were dosed...three times weekly until a total of ten applications had been administered."

"Following a 14 day rest period, the guinea pigs were challenged on the right shoulder." (The left shoulder was apparently used for the first 10 applications; the right shoulder - previously unexposed - was used for challenge).

### 4. Quality assurance

A quality assurance review statement is provided on page 2 of the report, signed by William D. Barta on 10/07/83 and by Walter L. Bullock on 10/13/83.

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C. METHODS AND RESULTS:Observations

The application sites were scored (method of Draize) at 24 hours after application.

Results

There was no dermal irritation following the first 3 applications of the test material. All guinea pigs showed some irritation (erythema) following the 4th application of the test material; following the 6th, 7th, and 8th applications all showed the maximum score for erythema at the application site. On challenge, 4/10 guinea pigs showed an unequivocal response (erythema score of 2 or more) at a previously unexposed site. All DNCB controls showed well-defined responses after the 6th application, and all (10/10) showed a response after challenge.

D. DISCUSSION:

There seems little doubt from the reactions during the sensitizing period and from challenge that the formulation is a potential dermal sensitizer. The only thing that is surprising is that all 10 guinea pigs showed a strong response to continued applications of the test material after the 4th application, but only 4/10 had an unequivocal response after challenge.

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Reviewed by: Byron T. Backus, Toxicologist  
Section 3, Tox. Branch (TS-769C)  
Secondary reviewer: Marcia van Gemert, Ph.D., Section Head  
Section 3, Tox. Branch (TS-769C)

*Byron T. Backus*  
*10/06/86*  
*M. van Gemert 10.9.86*

00554

DATA EVALUATION REPORT VI

STUDY TYPE: Primary Eye Irritation - Rabbit TOX. CHEM. NO.: 463F

ACCESSION NUMBER: 260449 MRID NO.: not given

TEST MATERIAL: FMC 54800 100 g/l EC

SYNONYMS: Bifenthrin, Talstar, FMC 54800

STUDY NUMBER(S): A83-1057

SPONSOR: FMC Corporation

TESTING FACILITY: FMC Toxicology Laboratory

TITLE OF REPORT: Primary Eye Irritation of FMC 54800, 100 g/l EC  
in Rabbits

AUTHOR(S): Freeman, C., Rand, G. M. and Norvell, M. J.

REPORT ISSUED: 30 September 1983

CLASSIFICATION: core-minimum

CONCLUSIONS:

1. The study is acceptable as core minimum data.
2. On the basis of this study, this formulation has to be considered as capable of causing irreversible corneal damage. The formulation is therefore in toxicity category I on the basis of potential eye irritation effects, and should be labeled accordingly.

A. MATERIALS:

1. Test material

FMC 54800 100 g/l EC, Description: a yellow liquid containing 11.6% of the active ingredient, stored at room temperature, pH 4.7. Lot # PL-83-49.

2. Test animals

Species: rabbit, strain: New Zealand white, Age: "young

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adult. Weight: 2.08-2.55 kg. Source: Davidson's Mill Farm, Jamesburg, NJ.

B. STUDY DESIGN:

1. Animal assignment

"Rabbits were randomized into their cages from the shipping boxes using a computer generated table of random numbers."

2. Test material preparation

The test material was administered undiluted.

3. Test material administration

0.1 ml of test material was administered into the lower conjunctival sac of the right eye of each of 9 rabbits. The eyes of six of the rabbits remained unwashed while the eyes of three of the rabbits were gently washed with 100 mls tap water (starting?) approximately 20-30 seconds after administration.

4. Quality assurance

A quality assurance review statement is provided on page 2 of the report, signed by William D. Barta on 9/28/83 and by Walter L. Bullock on 9/29/83.

C. METHODS AND RESULTS:

Observations

The eyes were scored for irritation potential using Draize scoring at 1, 24, 48 and 72 hours and on days 4, 7, 10, 13, 16, 19 and 22 of the study. After the 24 hour examination eyes were examined with sodium fluorescein dye.

Results

At 24 hours 6/6 unwashed and 2/3 washed eyes showed some degree of corneal opacity, with retention of fluorescein dye. By day 13 5/6 unwashed and 2/3 washed eyes showed some corneal opacity. On day 19 2/6 unwashed eyes and 1/3 washed eyes showed corneal opacity; only one unwashed eye showed dye retention. On day 22 1/6 unwashed eyes (and 0/3 washed eyes) had corneal opacity; this eye was also the only one which stained. However, the one eye with corneal opacity, as well as two others which had been unwashed, showed vascularization.

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D. DISCUSSION:

The results of this study indicate that this formulation has the potential for causing irreversible eye damage. On this basis, the product is in toxicity category I, and the appropriate signal word is DANGER.

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