VOLUME____OF____OF SUBMISSION

MK 936 FS (500G/L) (A14006B): FINAL REPORT

TITLE

Acute Oral Toxicity Study in the Rat – Up and Down Procedure

DATA REQUIREMENT

OPPTS Guideline Number 870.1100

AUTHOR

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COMPLETION DATE

October 13, 2003

PERFORMING LABORATORY

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LABORATORY STUDY IDENTIFICATION

CTL Number AR7224

SUBMITTER/SPONSOR

Syngenta Crop Protection, Inc.
410 Swing Road
Post Office Box 18300
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VOLUME 1 OF 1 OF STUDY

STATEMENTS OF DATA CONFIDENTIALITY CLAIMS

1) *The following statement applies to submissions to regulatory agencies in the United States of America.*

STATEMENT OF NO DATA CONFIDENTIALITY CLAIM

No claim of confidentiality is made for any information contained in this study on the basis of its falling within the scope of FIFRA Section 10 (d) (1) (A), (B), or (C).

Company: Syngenta Crop Protection, Inc.

Company Representative: Carolyn Brinkley

Title: Senior Regulatory Product Manager

Signature: Carolyn Brinkley Date: Mar. 23, 2004

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STATEMENT OF GLP COMPLIANCE AND AUTHENTICATION

I, the undersigned, declare that the objectives laid down in the protocol were achieved and that the data generated are valid. The report fully and accurately reflects the procedures used and the raw data generated in the above study.

The study (AR7224) was conducted in compliance with the UK Principles of Good Laboratory Practice (The United Kingdom GLP Regulations 1999, Statutory Instrument No. 3106) except for the deviation listed below. These Principles are in accordance with the OECD Principles of Good Laboratory Practice, revised 1997 (ENV/MC/CHEM(98)17).

The following GLP deviation is considered not to affect the integrity of the study or the validity of the conclusions drawn:

(i) the stability, homogeneity and achieved concentration of the test substance in the vehicle used were not determined by analysis.

I R Johnson
Study Director

13 October 2003
Date

Merrill Tisdel
Representative of Submitter/Sponsor

March 23 2004
Date

Submitter/Sponsor: Syngenta Crop Protection, Inc.
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Greensboro, NC 27419

This page
may be required
by some
regulatory authorities.

NOT APPLICABLE

QUALITY ASSURANCE STATEMENT

In accordance with CTL policy and QA procedures for Good Laboratory Practice, this report has been audited and the conduct of this study has been inspected as follows:

Date	Audit/Inspection	Date of QA Report
17 Sep 2003	Draft report	18 Sep 2003
10 Oct 2003	Final report review	10 Oct 2003

In addition, inspections associated with this type of study were made as follows:

15 Apr 2003	Dose administration, bodyweights, clinical observations	16 Apr 2003
14 May 2003	Dose preparation	20 May 2003
16 May 2003	Post mortem	20 May 2003
27 May 2003	Protocol	27 May 2003

Facilities and process based procedures associated with this type of study were inspected in accordance with QA Standard Operating Procedures.

So far as can be reasonably established, the methods described and the results given in the final report accurately reflect the raw data produced during the study, AR7224.

I F Bayliss .....Bayliss..... 13 October 2003

(CTL Quality Assurance Unit)

STUDY CONTRIBUTORS

The following contributed to this report in the capacities indicated:

Name	Title
I R Johnson	Study Director
D Beeston	Study Licensee
D Lees	Study Reviewer
S Duffell	Pathologist
A M Leah	Report preparation

CONTENTS

TABLES

APPENDIX

1. SUMMARY

1.1 Study design

Female Alpk:APfSD (Wistar-derived) rats received a single oral dose of 17.5, 55, 175 or 550mg/kg of MK936 FS (500g/l). The animals were observed daily for the following 14 days for mortality and any signs of systemic toxicity.

Bodyweights were recorded at intervals during the study. At the end of the study all animals were killed and examined *post mortem*.

1.2 Results

Following a dose of 17.5mg/kg to one rat, the animal survived and showed no signs of systemic toxicity.

Following a dose of 55mg/kg to two rats, one animal showed signs of severe toxicity and was killed *in extremis* on day 1. The other animal showed signs of slight toxicity, with complete recovery within 5 days.

Following a dose of 175mg/kg to two rats, one animal showed signs of severe toxicity and was killed *in extremis* on day 7. The other animal showed signs of moderate toxicity, with complete recovery within 8 days.

Following a dose of 550mg/kg to one rat, the animal showed signs of severe toxicity and was killed *in extremis* on day 1.

All surviving animals showed an overall bodyweight gain during the study.

At examination *post mortem* the only treatment-related finding was red staining of the mouth and nares of the animal dosed with 175mg/kg, which was killed *in extremis*.

1.3 Conclusion

Based on AOT 425 Stat. Pgm., the acute oral median lethal dose of MK936 FS (500g/l) was estimated to be 98.11mg/kg (95% confidence limits 0 to greater than 2000mg/kg) to female rats.

2. INTRODUCTION

2.1 Purpose

The purpose of this study was to assess the acute oral toxicity of MK936 FS (500g/l) to female rats, following a single oral dose.

The study was carried out according to the Modified Up-and-Down Procedure (ASTM, 1987).

2.2 Regulatory guidelines

The study has been done in accordance with the following Regulatory Guidelines:

a) OECD guideline reference 425 (2001): Acute Oral Toxicity - Up-and-Down Procedure.

b) United States Environmental Protection Agency, Health Effects Test Guidelines (2002), OPPTS 870.1100, Acute Oral Toxicity.

2.3 Justification for test system selection

The albino rat was used because it is the species generally recommended for the assessment of toxicity. The Alpk:APfSD strain of rat was used because of the substantial background data available for this strain, in this Laboratory, relating to studies of this type. The oral route was chosen as this represents a possible route of human exposure.

2.4 Dose level selection

Dose levels were selected using the modified up and down procedure (Appendix A).

An initial dose level of 175mg/kg was chosen using the default values in the statistical program (AOT 425 Stat Pgm). Further dose levels of 17.5, 55 and 550mg/kg were chosen using the criteria in Appendix A. A minimum of 48 hours was allowed between dosing each animal in the sequence.

2.5 Study dates

The study was initiated on 12 May 2003. The experimental phase started on 12 May 2003 and was completed on 8 July 2003.

2.6 Data storage

An original report, the study protocol and all raw data, samples and specimens, pertaining to this study are retained in the Archives, Central Toxicology Laboratory (CTL), Alderley Park, Macclesfield, Cheshire, UK.

3. TEST SUBSTANCE AND VEHICLE

3.1 Test substance

Name:	MK936 FS (500g/l)
Source:	Technology & Projects, Syngenta Crop Protection Inc, Greensboro, North Carolina, USA.
Colour:	White
Physical state:	Liquid
Batch reference number:	FL030602
CTL test substance reference number:	Y12230/006
Formulation reference no:	A14006B
AI content of formulation (w/w):	47.2%
Expiry date:	March 2004
Storage conditions:	Ambient temperature in the dark

A certificate of analysis (study number: T001314-03, dated 27 March 2003) is retained in the CTL Archives. The test substance characterisation was carried out by Syngenta.

3.2 Vehicle

The vehicle for the test substance was deionised water (CTL test substance reference number Y04517/015).

4. EXPERIMENTAL PROCEDURES

4.1 Dose formulations

Dose formulations (which were not corrected for the purity of the test substance) were prepared by the CTL Central Dispensary. A measured amount of the test substance was formulated in deionised water and was thoroughly mixed.

4.2 Analysis of dose preparation

Achieved concentration, homogeneity and stability of the dosing preparations were not determined.

4.3 Experimental design

4.3.1 Animals

Species:	Rat
Strain:	Alpk:AP$_f$SD
Source:	Rodent Breeding Unit, Alderley Park, Macclesfield, Cheshire, UK.
Sex/number used:	Six females
Age and weight range at start of study	Approximately 8-12 weeks old. Bodyweight 175-244g.

4.3.2 Accommodation and husbandry

Animals were individually housed, in cages suitable for animals of this strain and the weight range expected during the course of the study.

The animal room was designed to give the environmental conditions shown as follows:

Temperature:	22±3°C
Relative humidity:	30-70%
Air changes:	A minimum of 15 changes per hour
Light cycle:	Artificial, giving 12 hours light, 12 hours dark

Both temperature and relative humidity were recorded daily. The recorded values were within the specified ranges.

Diet (RM1), supplied by Special Diets Services Limited, Witham, Essex, UK, and mains water, supplied by an automatic system, were available *ad libitum*, except that each rat was fasted overnight immediately prior to dosing to ensure its stomach was empty (the presence of food could affect the rate of absorption of the test substance).

Each batch of diet is routinely analysed for composition and for contaminants. Water is also periodically analysed for contaminants. No contaminants were found in the diet or water at levels considered likely to interfere with the purpose or outcome of the study. Certificates of analyses are retained in the CTL Archives.

4.3.3 Acclimatisation

The animals were housed under the experimental conditions for at least 5 days, prior to the start of dosing.

4.3.4 Animal identification

Animals were individually identified with a number, unique within the study, by ear punching.

A card was displayed on the front of each cage, identifying the animal within. A card was also displayed on the cage to indicate the date of the pre-dose fasting period.

4.3.5 Dose regime

Animals were dosed in the following order:

Step	Animal numbers	Dose level (mg/kg)	Comments
1	50	175	survived
2	39	550	died
3	60	175	died
4	2439	55	died
5	44	17.5	survived
6	211	55	survived

4.3.6 Dose administration

Dose levels were altered by adjusting the concentration of the dosing preparations.

The volume of the dose was calculated for each animal according to its weight at the time of dosing.

A standard volume of 0.55ml/kg bodyweight of the dosing preparation was administered by gavage using a stomach tube.

4.4 Clinical observations

Prior to dosing, all rats were examined to ensure that they were physically normal and behaved normally. The animals were observed for signs of systemic toxicity immediately after dosing and a further twice following dosing on day 1. Subsequent observations were made daily, up to day 15.

4.5 Bodyweights

The animals were weighed prior to fasting on the day before dosing (day -1), immediately before dosing (day 1) and on days 8 and 15.

4.6 Investigations *post mortem*

4.6.1 Termination

Animals were killed by an overdose of halothane vapour, followed by exsanguination.

4.6.2 Macroscopic examination

All animals were examined *post mortem*. Animals killed *in extremis* were examined as soon as possible after death.

The examination involved an external observation and a careful examination of all thoracic and abdominal viscera. All abnormalities were recorded but tissues were not submitted for histopathological examination.

5. DATA EVALUATION

Data were evaluated using the Acute Oral Toxicity (OECD Test Guidelines 425) Statistical Programme (AOT 425 Stat Pgm).

6. RESULTS

6.1 Clinical observations and mortality (Table 1)

Following a dose of 17.5mg/kg to one rat, the animal survived and showed no signs of systemic toxicity.

Following a dose of 55mg/kg to two rats, one animal showed signs of severe toxicity and was killed *in extremis* on day 1. The other animal showed signs of slight toxicity, with complete recovery within 5 days.

Following a dose of 175mg/kg to two rats, one animal showed signs of severe toxicity and was killed *in extremis* on day 7. The other animal showed signs of moderate toxicity, with complete recovery within 8 days.

Following a dose of 550mg/kg to one rat, the animal showed signs of severe toxicity and was killed *in extremis* on day 1.

6.2 Bodyweights (Table 2)

All animals lost weight initially, due to the pre-dose fast. All surviving animals showed an overall bodyweight gain during the study.

6.3 Investigations *post mortem* (Table 3)

One animal dosed with 175mg/kg and killed *in extremis* had red staining of the mouth and nares. There were no abnormalities in any other animal.

7. CONCLUSION

Based on AOT 425 Stat. Pgm., the acute oral median lethal dose of MK936 FS (500g/l) was estimated to be 98.11mg/kg (95% confidence limits 0 to greater than 2000mg/kg) to female rats.

8. REFERENCES

ASTM (1987). Standard Test Method for Estimating Acute Oral Toxicity in Rats. American Society for Testing and Materials, Philadelphia, PA, E 1163 - 1187.

Acute Oral Toxicity (OECD Test Guideline 425) Statistical Programme (AOT 425 Stat Pgm). Version: 1.0, 2001. [http://www.oecd.org/pages/home/display general/0,3380,EN-document-524-nodirectorite-0-24-6775-8,FF.html).

GLOSSARY FOR ANIMAL DATA TABLES

NAD	-	no abnormalities detected
NO	-	number
X	-	present
S	-	slight
M	-	moderate
E	-	extreme
I	-	increased
B	-	both
N	-	absent
RESPIRAT/Y	-	respiratory
(D)	-	animal died/humanely killed on this day
wks	-	weeks
F	-	female

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 01 ANIMAL NO: 50 SEX: FEMALE START DATE: 13/05/03
DOSE: 175 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 15																^
*** NAD ***	X	X								X	X	X	X	X	X	X
ACTIVITY DECREASED			M	SS	S	S	S	N								
VOCALISATION		X	N													
RESPONSE TO SOUND		II	N													
TREMORS		SN	S	SS	S	N										
KILLED TERMINATION																X
SPLAYED GAIT				SS	S	S	S	N								
TIP TOE GAIT		SSS	SS	SS	S	N										
PILOERECTION			S	SM	S	N										
SEE FREE TEXT		XX	XX	XX	N											
UPWARD CURVATURE OF SPINE		SSS	SM	SS	M	S	S	S	N							
REDUCED SPLAY REFLEX					S	S	S	S	N							
SKIN SENSITIVE TO TOUCH		X	XX	XX	X	X	X	N								

DAY: 1 COMMENT: TREMORS MORE PRONOUNCED WHEN DISTURBED.

DAY: 2 COMMENT: TREMORS WHEN DISTURBED.

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 01 ANIMAL NO: 50 SEX: FEMALE START DATE: 13/05/03
DOSE: 175 MG/KG

DAY: 2 COMMENT: TREMORS WHEN DISTRUBED.

DAY: 3 COMMENT: TREMORS AND APPEARS RIGID WHEN HELD OR DISTURBED.

DAY: 3 COMMENT: TREMORS AND APPEARS RIGID WHEN HELD OR DISTURBED.

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 01 ANIMAL NO: 60 SEX: FEMALE START DATE: 3/06/03
DOSE: 175 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 7	----------							^								
*** NAD ***	X	XX														
ACTIVITY DECREASED				S	S	S	S	SSS								
RESPONSE TO SOUND		II	N					II								
TREMORS		EE	S	N				EEE								
KILLED IN EXTREMIS-TOXIC								X								
REDUCED STABILITY				S	N											
CYANOSED								X								
PALE				X	N			XXX								
PILOERECTION			S	S	S	X	X	SSS								
SALIVATION								SN								
SIDES PINCHED IN								SSS								
SIGNS OF SALIVATION								SS								
SEE FREE TEXT		XX	N					X								
UPWARD CURVATURE OF SPINE		M	S	S	S	S	S	SSS								
REDUCED SPLAY REFLEX			S	S	N			EEE								
LABOURED BREATHING								X								

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 01 ANIMAL NO: 60 SEX: FEMALE START DATE: 3/06/03
DOSE: 175 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 7								^								
SKIN SENSITIVE TO TOUCH			X	X	N			XX								

DAY: 1 COMMENT: ANIMAL GOES RIGID WHEN HELD.

DAY: 1 COMMENT: ANIMAL GOES RIGID WHEN HELD.

DAY: 7 COMMENT: TONGUE APPEARS SWOLLEN.

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 02 ANIMAL NO: 39 SEX: FEMALE START DATE: 20/05/03
DOSE: 550 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 1	---------^															
*** NAD ***	X	X														
ACTIVITY DECREASED		SE														
RESPONSE TO SOUND		II														
TAIL ERECTION		SN														
TREMORS		ME														
KILLED IN EXTREMIS-TOXIC		X														
REDUCED STABILITY		MM														
SEE FREE TEXT		X														
REDUCED SPLAY REFLEX		EE														
SKIN SENSITIVE TO TOUCH		XX														

DAY: 1 COMMENT: ANIMAL GOES RIGID WHEN HELD.

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 03 ANIMAL NO: 211 SEX: FEMALE START DATE: 24/06/03
DOSE: 55 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 15	----------															^
*** NAD ***	X	X					X	X	X	X	X	X	X	X	X	X
RESPONSE TO SOUND			I	I	N											
KILLED TERMINATION																X
TIP TOE GAIT		S	N													
PILOERECTION		SS	S	S	S	N										
SIDES PINCHED IN		SS	N													
UPWARD CURVATURE OF SPINE		SS	N	S	S	N										
REDUCED SPLAY REFLEX		M	M	N												

DAY: 2 COMMENT: ANIMAL GOES RIGID WHEN HELD

DAY: 3 COMMENT: ANIMAL GOES RIGID WHEN HELD

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 03 ANIMAL NO: 2439 SEX: FEMALE START DATE: 17/06/03
DOSE: 55 MG/KG

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 1		---------^														
*** NAD ***	X	X														
ACTIVITY DECREASED		SE														
PROSTRATE		X														
KILLED IN EXTREMIS-TOXIC		X														
TIP TOE GAIT		SN														
EYE PALLOR		B														
PILOERECTION		SS														
STAINED WITH URINE - WET		S														
REDUCED SPLAY REFLEX		SE														
LABOURED BREATHING		X														
ABNORMAL RESPIRAT/Y NOISE		X														

TABLE 1 - CLINICAL OBSERVATIONS

GROUP NO: 04 ANIMAL NO: 44 SEX: FEMALE START DATE: 19/06/03
DOSE: 17.5 MG/ML

CLINICAL OBSERVATION	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
DIED ON DAY 15	----------^															
*** NAD ***	X	XXX	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KILLED TERMINATION																X

TABLE 2 - BODYWEIGHTS (g)

DOSE: 175 MG/KG

ANIMAL NUMBER	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
FEMALES																
50	244	221	-	241	229	229	229	-	231	-	-	-	-	-	-	257 (D)
60	239	224	-	239	-	-	-	208*(D)								

* - BODYWEIGHT PRIOR TO DEATH

TABLE 2 - BODYWEIGHTS (g)

DOSE: 550 MG/KG

ANIMAL NUMBER	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
FEMALES																
39	231	207 (D)														

TABLE 2 - BODYWEIGHTS (g)

DOSE: 55 MG/KG

ANIMAL NUMBER	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
FEMALES																
211	211	193	-	-	-	-	-	-	226	-	-	-	-	-	-	235 (D)
2439	175	154 (D)														

TABLE 2 - BODYWEIGHTS (g)

DOSE: 17.5 MG/ML

ANIMAL NUMBER	DAY -1	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15
FEMALES																
44	200	179	-	-	-	-	-	-	230	-	-	-	-	-	-	248 (D)

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 50 SEX: F DOSE: 175 MG/KG ON STUDY: 15 days (3 wks) TERMINAL

MACROPATHOLOGY

Killed by Halothane ; NAD.

----------END OF ANIMAL----------

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 60 SEX: F DOSE: 175 MG/KG ON STUDY: 7 days (1 wk) INTERCURRENT

MACROPATHOLOGY

Killed by Halothane ; Animal killed and bled in cell by severing femoral artery, remaining tissues NAD.

THE FOLLOWING MACROSCOPIC OBSERVATIONS WERE MADE

NASAL CAVITY
Nares stained : (slight) red.
ORAL CAVITY
Mouth stained : (slight) red.

----------END OF ANIMAL----------

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 39 SEX: F DOSE: 550 MG/KG ON STUDY: 1 day (1 wk) INTERCURRENT

MACROPATHOLOGY

Killed by Halothane ; Animal killed and bled in cell by severing femoral artery, NAD.

----------END OF ANIMAL----------

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 211 SEX: F DOSE: 55 MG/KG ON STUDY: 15 days (3 wks) TERMINAL

MACROPATHOLOGY

Killed by Halothane ; NAD.

----------END OF ANIMAL----------

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 2439 SEX: F DOSE: 55 MG/KG ON STUDY: 1 day (1 wk) INTERCURRENT

MACROPATHOLOGY

Killed by Halothane ; Killed in cell in extremis toxic and exanguinated. All tissues NAD at time of necropsy.

----------END OF ANIMAL----------

TABLE 3 - MACROSCOPIC FINDINGS

ANIMAL NO: 44 SEX: F DOSE: 17.5 MG/ML ON STUDY: 15 days (3 wks) TERMINAL

MACROPATHOLOGY

Killed by Halothane ; NAD.

END OF ANIMAL

APPENDIX A - UP-AND-DOWN METHOD : DOSING REGIME

METHOD

The initial dose level is usually set at 175mg/kg (taking into account any known toxicity of the test substance).

If the animal dosed at the initial level survives, a single animal is dosed at the next highest level. If the animal dosed at the initial level dies, a single animal is dosed at the next lowest level. This procedure is repeated for subsequent animals until one of the following "stopping rules" is met:

a) 3 consecutive animals survive at the limit dose (2000mg/kg)

b) 5 reversals (U turn decisions) occur in 6 consecutive animals [e.g.: 175mg/kg (animal survives), 550mg/kg (animal dies) - first U turn decision, 175mg/kg (animal survives) - second U turn decision, 550mg/kg (animal dies) - third U turn decision, 175mg/kg (animal survives) - fourth U turn decision, 550mg/kg (animal dies), fifth U turn decision, 175mg/kg (animal survives) - study complete]

c) At least 4 animals have followed the first reversal (U turn) and the specified likelihood ratios exceed the critical value.

CERTIFICATE OF ANALYSIS

SYNGENTA CROP PROTECTION, INC.
ANALYTICAL & PRODUCT CHEMISTRY DEPARTMENT

STUDY NUMBER: T001314-03

CERTIFICATE OF ANALYSIS

DESIGN CODE:	A14006B	BATCH ID:	FL030602
PRODUCT DENOMINATION:	MK936 FS (500 g/L)	SOURCE:	Technology & Projects, Syngenta Crop Protection, Inc.
OTHER ID:	1282-2		

Location of Raw Data: Syngenta Crop Protection, Inc.
410 Swing Road
Greensboro, NC 27409

PURITY: 47.2% (wt/wt)

EXPIRATION DATE: March 2004

STABILITY

The stability of this formulation will be determined concurrently through reanalysis of test substance held in inventory under GLP conditions.

This material was characterized under Good Laboratory Practices per 40 CFR Part 160.

Rene V. Arenas
Study Director
Rene Arenas
Sr. Staff Chemist

March 27, 2003
Completion Date