

MUTAGENICITY TEST ON
T-6342
IN AN *IN VIVO* MOUSE MICRONUCLEUS ASSAY

FINAL REPORT

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LABORATORY PROJECT IDENTIFICATION

CHV Study No.: 17073-0-455

SUBMITTED TO

3M Corporation
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St. Paul, Minnesota 55144-1000

STUDY COMPLETION DATE

December 14, 1995

QUALITY ASSURANCE STATEMENT

Project Title: *In Vivo* Mouse Micronucleus Assay

Project No.: 20996

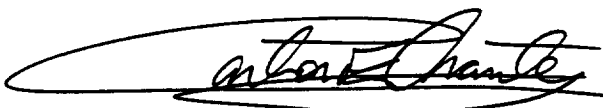
Assay No.: 17073

Protocol No.: 455

Edition No.: 17, Modified for 3M Corporation

Quality Assurance inspections of the study and review of the final report of the above referenced project were conducted according to the Standard Operating Procedures of the Quality Assurance Unit and according to the general requirements of the appropriate Good Laboratory Practice regulations. Findings from the inspections and final report review were reported to management and to the study director on the following dates:

<u>Inspection/Date</u>	<u>Findings Reported</u>	<u>Auditor</u>
Randomization of Animals/09/18/1995	09/18/1995	S. Ballenger
Draft report Review/10/31/1995	10/31/1995	C. Orantes
Final Report Review/12/14/1995	12/14/1995	C. Orantes


Quality Assurance Unit

12/14/95
Date Released

STUDY COMPLIANCE AND CERTIFICATION

The described study was conducted in compliance with the Good Laboratory Practice regulations as set forth in the Food and Drug Administration (FDA), Title 21 of the U.S. Code of Federal Regulations Part 58, issued December 22, 1978, (effective June 20, 1979) with any applicable amendments. There were no significant deviations from the aforementioned regulations or the signed protocol that would affect the integrity of the study or the interpretation of the test results. The raw data have been reviewed by the Study Director, who certifies that the evaluation of the test article as presented herein represents an appropriate conclusion within the context of the study design and evaluation criteria.

All test and control results in this report are supported by an experimental data record and this record has been reviewed by the Study Director. All raw data, documentation, records, protocol and a copy of the final report generated as a result of this study will be archived in the storage facilities of Corning Hazleton Inc. for at least one year following submission of the final report to the Sponsor. After the one year period, the Sponsor may elect to have the aforementioned materials retained in the storage facilities of Corning Hazleton Inc. for an additional period of time, or sent to a storage facility designated by the Sponsor.

Submitted By:

Study Director:

Hemalatha Murli, Ph.D.
Mammalian Cytogenetics
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Study Completion
Date

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SUMMARY

Mutagenicity Test on T-6342 in an *In Vivo* Mouse Micronucleus Assay

The objective of this *in vivo* assay was to evaluate the ability of the test article, T-6342, to induce micronuclei in bone marrow polychromatic erythrocytes of Crl:CD-1[®](ICR) BR mice.

In the dose selection study, the test article was solubilized in deionized water and dosed by oral gavage at 500, 1625, 2750, 3875, and 5000 mg/kg. Six animals (three males and three females) were assigned to each dose group. Animals were observed for three days after dosing for toxic signs and/or mortality.

Based on the results of the dose selection study, the maximum tolerated dose was estimated as >5000 mg/kg. In the micronucleus assay, the test article was solubilized in deionized water and dosed by oral gavage at 1250, 2500, and 5000 mg/kg. Ten animals (five males and five females) were randomly assigned to each dose/harvest time group. Vehicle and positive control groups euthanatized approximately 24 hours after dosing were included in the assay. The animals dosed with the test article were euthanatized approximately 24, 48 and 72 hours after dosing for extraction of the bone marrow.

The test material, T-6342, did not induce a significant increase in micronuclei in bone marrow polychromatic erythrocytes under the conditions of this assay and is considered negative in the mouse bone marrow micronucleus test.

Mutagenicity Test on T-6342 in an *in vivo* Mouse Micronucleus Assay

1.0 SPONSOR: 3M Corporation

2.0 MATERIAL (Test Article)

2.1 Client's Identification: T-6342

2.2 Date Received: July 21, 1995

2.3 Physical Description: Clear, colorless liquid

2.4 Genetics Assay No.: 17073

3.0 TYPE OF ASSAY: *In Vivo* Mouse Micronucleus Assay

4.0 PROTOCOL NO.: 455, Edition 17, Modified for 3M Corporation

5.0 STUDY DATES

5.1 Initiation Date: August 15, 1995

5.2 Experimental Start Date: August 29, 1995

5.3 Experimental Termination Date: October 16, 1995

6.0 SUPERVISORY PERSONNEL

6.1 Study Director: Hemalatha Murli, Ph.D.

6.2 Laboratory Supervisor: Monica Vegarra, B.S.

7.0 OBJECTIVE

The objective of this *in vivo* assay was to evaluate the ability of the test article, T-6342, to induce micronuclei in bone marrow polychromatic erythrocytes of Crl:CD-1[®](ICR) BR mice. This study was conducted using modifications of the procedures suggested by Heddle et al. (1983).

8.0 MATERIALS

Adult male and female mice, strain Crl:CD-1®(ICR) BR, were purchased from Charles River Laboratories, Portage MI.. This healthy, random bred strain was selected to maximize genetic heterogeneity and at the same time assure access to a common source. The protocol for this study was approved by the CHV-ACUC prior to the initiation of dosing.

Animals were housed up to seven per cage during quarantine, and housed up to five per cage at randomization. The temperature and relative humidity were maintained at $72\pm6^{\circ}\text{F}$ and $55\pm15\%$, respectively. A 12-hour light/12-hour dark cycle was maintained. A commercial diet (Purina® Certified Laboratory Pellets ® # 5002) and water were available ad libitum for the duration of the study. The feed was analyzed by the manufacturer for concentrations of specified heavy metals, aflatoxin, chlorinated hydrocarbons, organophosphates, and specified nutrients. The water was analyzed on a retrospective basis for specified microorganisms, pesticides, alkalinity, heavy metals, and halogens. Sanitized caging was used for housing the animals. Personnel handling animals or working within the animal facilities were required to wear suitable protective garments and equipment.

Animals were quarantined for seven before being placed on study. Animals were randomly assigned to study groups and were individually weighed prior to dosing. All animals were dosed based upon the individual body weights. Animals were uniquely identified by ear tag. Dose or treatment groups were identified by cage card/label.

At the termination of the study all surviving animals were euthanatized by CO_2 inhalation, followed by penetration of the thorax. Any extra animals not used for the study were euthanatized by CO_2 inhalation, followed by penetration of the thorax.

9.0 SOLUBILITY AND STABILITY:

The test article, T-6342, was supplied as a clear colorless liquid. The vehicle selected for this assay was deionized water. The stability of the test material under the dosing conditions of this assay is the responsibility of the sponsor.

10.0 DOSE SELECTION STUDY

10.1 Dose Selection

Dose levels of 500, 1625, 2750, 3875, and 5000 mg/kg were administered by oral gavage for the dose selection study.

10.2 Dosing Information

The animals used in the dose selection assay were dosed on August 29, 1995. The weight range of the animals used in the dose range finding assay was 26.5 - 33.5 and 21.1 - 25.1 grams, for the males and females, respectively. Dosing solutions were prepared just prior to dosing and were prepared by making a 500 mg/ml stock for the high dose (5000 mg/kg). This was prepared by adding 6.6 ml of deionized water (Lot # 17, prepared at CHV) to 6.0007 g of T-6342, resulting in a clear, colorless solution. Dilutions of this stock were prepared for the other dose levels.

Dosing was achieved using a 10 ml/kg dosing volume. All animals were eight weeks and one day old at the time of dosing. An outline of the dosing scheme is found in the following table.

A total of 30 animals was used in this assay.

DOSE GROUPS		
TREATMENT	M	F

T-6342		
500 mg/kg	3	3
1625 mg/kg	3	3
2750 mg/kg	3	3
3875 mg/kg	3	3
5000 mg/kg	3	3

All doses given were on an acute (one-time only) basis.

10.3 Results and Interpretation

All animals were examined after dosing and daily throughout the duration of the study (three days) for toxic effects and/or mortalities. All animals appeared normal immediately after dosing and remained healthy until the end of the observation period. The mortality data for this assay are summarized in the following table:

**Summary of Mortalities Within 3 Days
in Mice Dosed Acutely with T-6342**

Observations

<u>Treatment</u>	<u>Male</u>	<u>Female</u>
500 mg/kg	0/3	0/3
1625 mg/kg	0/3	0/3
2750 mg/kg	0/3	0/3
3875 mg/kg	0/3	0/3
5000 mg/kg	0/3	0/3

10.4 Conclusion

Based on these results, the maximum tolerated dose was estimated to be >5000 mg/kg.

11.0 MICRONUCLEUS STUDY

11.1 Dose Selection

Based on results from the dose selection study, dose levels of 1250, 2500, and 5000 mg/kg were selected for this study.

11.2 Micronucleus Assay Dosing Information

The animals used in the micronucleus assay were dosed on September 19, 1995. Cyclophosphamide (Sigma, Lot # 43H0269, CAS # 6055-19-2), the positive control, was solubilized in sterile deionized water (Lot #17, prepared at CHV) and was administered by oral gavage at 80 mg/kg. The vehicle control, deionized water (Lot # 17, prepared at CHV), was administered concurrently with the test article at a volume of 10 ml/kg. The weight range of the animals used in the micronucleus assay was 28.7 - 37.6 g and 21.1 - 25.6 g grams for the males and females, respectively. The dosing solutions for the assay were prepared by making a 500 mg/ml stock for the high dose (5000 mg/kg). This was prepared by adding deionized water to 11.0008 g of T-6342 up to a volume of 22.0 ml. A clear, colorless solution was obtained. Dilutions of this stock were prepared for the remaining dose levels.

Ten animals (five males and five females) were randomly assigned to each dose/-harvest time group. Vehicle and positive control groups, euthanatized approximately 24 hours after dosing, were included in the assay. The animals dosed with the test article were euthanatized approximately 24, 48 and 72 hours after dosing for extraction of the bone marrow. An outline of the dosing scheme is found in the following table:

Dosing Scheme for Micronucleus Assay

A total of 110 animals was used in this assay

Treatment	Number of Animals Assigned					
	24 Hr		48 Hr		72 Hr	
	M	F	M	F	M	F
T-6342						
1250 mg/kg	5	5	5	5	5	5
2500 mg/kg	5	5	5	5	5	5
5000 mg/kg	5	5	5	5	5	5
Vehicle Control, deionized water 10 ml/kg	5	5	-	-	-	-
Positive Control, Cyclophosphamide, 80 mg/kg	5	5	-	-	-	-

The age of the animals at the time of dosing was eight weeks and one day.
Volume dosed was 10 ml/kg and was based upon individual animal weight.

12.0 BONE MARROW HARVEST, SLIDE PREPARATION AND ANALYSIS

At the appropriate harvest time, the animals were euthanatized with CO₂ followed by penetration of the thorax and the adhering soft tissue and epiphyses of both femora were removed. The marrow was flushed from the bone and transferred to centrifuge tubes containing 3 - 5 ml bovine serum (one tube for each animal). Following centrifugation to pellet the tissue, the supernatant was removed by aspiration and portions of the pellet were spread on slides and air dried. The slides were fixed in methanol, and stained in May-Grunwald solution followed by Giemsa (Schmid, 1975). The air-dried slides were coverslipped using Depex® mounting medium.

The slides were coded for analysis, and scored for micronuclei and the polychromatic erythrocyte (PCE) to normochromatic erythrocyte (NCE) cell ratio. Standard forms were

used to record these data. One thousand PCEs per animal were scored. The frequency of micronucleated cells was expressed as percent micronucleated cells based on the total PCEs present in the scored optic field. The normal frequency of micronuclei in this Crl:CD-1®(ICR) BR strain is about 0.0-0.4%.

The frequency of PCEs versus NCEs was determined by scoring the number of PCEs and NCEs observed in the optic fields while scoring the first 1000 erythrocytes.

13.0 EVALUATION CRITERIA:

13.1 General

The criteria for the identification of micronuclei were those of Schmid (1976). Micronuclei were darkly stained and generally round, although almond and ringshaped micronuclei occasionally occurred. Micronuclei had sharp borders and were generally between 1/20 and 1/5 the size of the PCE. The unit of scoring was the micronucleated cell, not the micronucleus; thus the occasional cell with more than one micronucleus was counted as one micronucleated PCE, not two (or more) micronuclei. The staining procedure permitted the differentiation by color of PCEs and NCEs (bluish-grey and red, respectively).

13.2 Data Presentation and Interpretation

Data are summarized by sex and dose groups for the different time points. Individual animal data are also presented. The analysis of these data was performed using an analysis of variance (Winer, 1971) on either untransformed (when variances are homogeneous) and rank transformed (when variances are heterogeneous) proportions of cells with micronuclei per animal. If the analysis of variance was significant ($p < 0.05$), a Dunnett's t-test (Dunnett, 1955; 1964) was used to determine which dose groups, if any, were significantly different from the negative control. Analyses were performed separately for each harvest time and sex combination. The criteria for determining a positive response involved a statistically significant dose-related increase in micronucleated PCEs, or the detection of a reproducible and statistically significant positive response for at least one dose level. A test article that induced neither a statistically significant dose response nor a statistically significant and reproducible increase at one dose level was considered negative. In either case, the final decision was based on scientific judgment.

14.0 RESULTS AND INTERPRETATION:

All animals were observed immediately after dosing and periodically throughout the duration of the assay for toxic symptoms and/or mortalities. All animals in the vehicle and positive control groups appeared normal after dosing and remained healthy until the appropriate harvest times. All animals from the 1250 and 2500 mg/kg dose groups appeared normal immediately after dosing and remained healthy until the appropriate harvest times.

Immediately after dosing, all animals in the 5000 mg/kg dose group appeared normal.

Approximately 24 hours after dosing, 2 males (#'s 2712, 48 hour harvest group; 2714, 72 hour harvest group) from the 5000 mg/kg dose group were found dead. One male (#2718, 72 hour harvest group) appeared hunched and weak with squinted eyes. All other animals appeared normal at this time.

Approximately 48 hours after dosing, 1 male (#2718, 72 hour harvest group) and 1 female (#2780, 72 hour harvest group) from the 5000 mg/kg dose group were found dead. All other animals appeared normal at this time and remained healthy until the appropriate harvest times.

The test article, T-6342, induced no significant increases in micronucleated polychromatic erythrocytes over the levels observed in the vehicle controls in either sex or at any of the harvest times. Due to toxicity, the PCE/NCE ratios of the males and females from the 5000 mg/kg dose group at the 72 hour harvest group were significantly lower than the vehicle control animals. The positive control, CP, induced significant increases in micronucleated PCEs in both sexes as compared to the vehicle controls, with means and standard errors of $5.44\% \pm 0.37\%$ and $2.50\% \pm 0.33\%$ for the males and females, respectively. The data summarized by dose group are presented in Table 1 and individual animal data are found in Tables 2 through 7. Historical control data are presented in Table 8.

15.0 CONCLUSION:

The test material, T-6342, did not induce a significant increase in micronuclei in bone marrow polychromatic erythrocytes under the conditions of this assay and is considered negative in the mouse micronucleus assay.

16.0 REFERENCES:

Dunnett, C.W.: A multiple comparisons procedure for comparing several treatments with a control. J. Am. Statist. Assoc., 50:1096-1121, 1955.

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Heddle, J.A., Hite, M., Kirkhart, B., Larsen, K., MacGregor, J.T., Newell, G.W. and Salamone, M.F.: The induction of micronuclei as a measure of genotoxicity. Mutation Res., 123:61-118, 1983.

Schmid, W.: The micronucleus test. Mutation Res., 31:9-15, 1975.

Schmid, W.: The micronucleus test for cytogenetic analysis. Chemical Mutagens: Principles and Methods for Their Detection, Vol. 4 (A. Hollaender, ed.). Plenum, pp. 31-53, 1976.

Winer, B.J.: Statistical Principles in Experimental Design, McGraw-Hill, New York, Second Edition, 1971.

17.0 EXPERIMENT DATA TABLES

TABLE 1
MICRONUCLEUS DATA SUMMARY TABLE

SPONSOR: 3M Corporation

TEST ARTICLE:T-6342

ASSAY:17073

TREATMENT	DOSE	HARVEST TIME (HR)	% MICRONUCLEATED PCEs MEAN OF 1000 PER ANIMAL ± S.E.			RATIO PCE:NCE MEAN ± S.E.	
			MALES	FEMALES	TOTAL	MALES	FEMALES
CONTROLS							
VEHICLE	Water	24 hr	0.14 ± 0.02	0.02 ± 0.02	0.08 ± 0.02	0.51 ± 0.06	0.69 ± 0.11
POSITIVE-CP	80.0 mg/kg	24 hr	5.44 ± 0.37*	2.50 ± 0.33*	3.97 ± 0.54*	0.64 ± 0.07	0.63 ± 0.05
TEST ARTICLE	1250 mg/kg	24 hr	0.28 ± 0.05	0.00 ± 0.00	0.14 ± 0.05	0.69 ± 0.09	0.75 ± 0.17
		48 hr	0.00 ± 0.00	0.02 ± 0.02	0.01 ± 0.01	0.68 ± 0.08	0.74 ± 0.06
		72 hr	0.06 ± 0.02	0.02 ± 0.02	0.04 ± 0.02	0.36 ± 0.08	0.59 ± 0.06
	2500 mg/kg	24 hr	0.12 ± 0.04	0.04 ± 0.02	0.08 ± 0.02	0.69 ± 0.07	0.64 ± 0.05
		48 hr	0.02 ± 0.02	0.02 ± 0.02	0.02 ± 0.01	0.79 ± 0.07	0.65 ± 0.01
		72 hr	0.20 ± 0.07	0.06 ± 0.04	0.13 ± 0.04	0.47 ± 0.07	0.64 ± 0.07
	5000 mg/kg	24 hr	0.06 ± 0.04	0.10 ± 0.04	0.08 ± 0.03	0.80 ± 0.08	0.79 ± 0.09
		48 hr	0.15 ± 0.09	0.06 ± 0.02	0.10 ± 0.04	0.56 ± 0.10	0.63 ± 0.06
		72 hr	0.17 ± 0.03	0.03 ± 0.03	0.09 ± 0.03	0.17 ± 0.04*	0.24 ± 0.05*

*Significantly different from the corresponding vehicle control, $p < 0.05$.

TABLE 2
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR: 3M Corporation

TEST ARTICLE: T-6342

ASSAY NO.: 17073

TREATMENT			ANIMAL NUMBER	NO. MN PCEs (1000)	RATIO PCE:NCE
24 HOUR HARVEST			MALE		
VEHICLE CONTROL	Water		2682	1	0.32
			2689	2	0.54
			2694	1	0.48
			2720	2	0.66
			2721	1	0.52
POSITIVE CONTROL	CP 80.0	mg/kg	2696	46	0.79
			2698	61	0.80
			2715	52	0.53
			2723	65	0.58
			2728	48	0.49
TEST ARTICLE	1250	mg/kg	2683	4	0.67
			2691	1	0.78
			2697	3	0.98
			2703	3	0.45
			2717	3	0.59
	2500	mg/kg	2679	2	0.74
			2685	1	0.47
			2693	0	0.90
			2702	2	0.72
			2724	1	0.60
	5000	mg/kg	2676	0	0.51
			2684	0	0.90
			2709	1	0.81
			2713	0	0.98
			2727	2	0.78

MN = Micronucleus
PCE = Polychromatic erythrocyte
No. MN PCEs = Micronucleated PCEs
NCE = Normochromatic erythrocyte

TABLE 3
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR:3M Corporation

TEST ARTICLE:T-6342

ASSAY NO.:17073

TREATMENT		ANIMAL NUMBER	NO. MN PCEs (1000)	RATIO PCE:NCE
24 HOUR HARVEST	FEMALE			
VEHICLE CONTROL	Water	2741	0	0.76
		2744	1	0.76
		2773	0	0.70
		2776	0	0.27
		2779	0	0.94
POSITIVE CONTROL	CP 80.0 mg/kg	2734	31	0.78
		2746	17	0.71
		2749	29	0.62
		2760	17	0.54
		2783	31	0.48
TEST ARTICLE	1250 mg/kg	2735	0	1.03
		2742	0	1.25
		2750	0	0.69
		2771	0	0.39
		2781	0	0.39
	2500 mg/kg	2732	0	0.56
		2733	0	0.64
		2738	0	0.81
		2755	1	0.54
		2772	1	0.67
	5000 mg/kg	2743	0	0.92
		2757	0	0.56
		2761	2	0.83
		2763	2	1.04
		2768	1	0.61

MN = Micronucleus
PCE = Polychromatic erythrocyte
No. MN PCEs = Micronucleated PCEs
NCE=Normochromatic erythrocyte

TABLE 4
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR: 3M Corporation

TEST ARTICLE: T-6342

ASSAY NO.: 17073

TREATMENT		ANIMAL NUMBER	NO. MN PCEs (1000)	RATIO PCE:NCE	
48 HOUR HARVEST		MALE			
TEST ARTICLE	1250	mg/kg	2680	0	0.44
			2681	0	0.54
			2695	0	0.77
			2705	0	0.77
			2710	0	0.89
	2500	mg/kg	2675	1	0.52
			2688	0	0.81
			2707	0	0.96
			2726	0	0.82
			2729	0	0.83
	5000	mg/kg	2677	1	0.32
			2699	1	0.64
			2700	4	0.47
			2708	0	0.79
			2712*		

*Animals found dead
 MN = Micronucleus
 PCE = Polychromatic erythrocyte
 No. MN PCEs = Micronucleated PCEs
 NCE = Normochromatic erythrocyte

TABLE 5
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR:3M Corporation

TEST ARTICLE:T-6342

ASSAY NO.:17073

TREATMENT			ANIMAL NUMBER	NO.MN PCEs (1000)	RATIO PCE:NCE
48 HOUR HARVEST FEMALE					
TEST ARTICLE	1250	mg/kg	2730	0	0.94
			2736	0	0.62
			2747	1	0.74
			2754	0	0.75
			2775	0	0.64
	2500	mg/kg	2737	0	0.67
			2745	1	0.69
			2758	0	0.62
			2759	0	0.65
			2762	0	0.63
	5000	mg/kg	2739	1	0.43
			2753	0	0.78
			2756	1	0.68
			2767	1	0.67
			2770	0	0.61

MN = Micronucleus
PCE = Polychromatic erythrocyte
No.MN PCEs = Micronucleated PCEs
NCE=Normochromatic erythrocyte

TABLE 6
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR:3M Corporation

TEST ARTICLE:T-6342

ASSAY NO.:17073

TREATMENT			ANIMAL NUMBER	NO. MN PCEs (1000)	RATIO PCE:NCE
72 HOUR HARVEST			MALE		
TEST ARTICLE	1250	mg/kg	2678	0	0.26
			2687	1	0.30
			2716	1	0.17
			2719	1	0.51
			2722	0	0.56
	2500	mg/kg	2692	0	0.28
			2701	3	0.37
			2704	4	0.52
			2711	2	0.49
			2725	1	0.70
	5000	mg/kg	2686	1	0.11
			2690	2	0.16
			2706	2	0.26
			2714*		
			2718*		

*Animals found dead
MN = Micronucleus
PCE = Polychromatic erythrocyte
No. MN PCEs = Micronucleated PCEs
NCE=Normochromatic erythrocyte

TABLE 7
MICRONUCLEUS TEST - INDIVIDUAL ANIMAL DATA

SPONSOR:3M Corporation

TEST ARTICLE:T-6342

ASSAY NO.:17073

TREATMENT			ANIMAL NUMBER	NO.MN PCEs (1000)	RATIO PCE:NCE
72 HOUR HARVEST			FEMALE		
TEST ARTICLE	1250	mg/kg	2740	0	0.68
			2751	0	0.48
			2766	1	0.68
			2769	0	0.40
			2778	0	0.71
	2500	mg/kg	2748	1	0.68
			2752	0	0.45
			2764	0	0.54
			2774	0	0.85
			2777	2	0.66
	5000	mg/kg	2731	0	0.24
			2765	0	0.38
			2780*		
			2782	1	0.18
			2784	0	0.18

*Animals found dead
 MN = Micronucleus
 PCE = Polychromatic erythrocyte
 No.MN PCEs = Micronucleated PCEs
 NCE=Normochromatic erythrocyte

TABLE 8
 MOUSE MICRONUCLEUS HISTORICAL CONTROL DATA 2/95 THROUGH 9/95

		% MICRONUCLEATED PCEs per 1000 PCE MEAN OF 1000 PER ANIMAL $\pm$ S.E.			RATIO PCE:NCE MEAN $\pm$ S.E.	
		MALES	FEMALES	TOTAL	MALES	FEMALES
POOLED VEHICLE CONTROL						
	MIN	0.00	0.00	0.01	0.32	0.34
	MAX	0.26	0.16	0.18	0.82	1.03
	AVG	0.08 ± 0.06	0.06 ± 0.04	0.07 ± 0.04	0.56 ± 0.13	0.61 ± 0.14
	N	49	49	49	49	49
POSITIVE CONTROL						
Cyclophosphamide, 80 mg/kg						
	MIN	1.72	1.50	1.81	0.44	0.44
	MAX	5.44	6.36	5.38	0.72	0.81
	AVG	3.25 ± 0.94	3.00 ± 1.05	3.13 ± 0.81	0.58 ± 0.09	0.62 ± 0.11
	N	22	22	22	22	22