FINAL REPORT

Study Title

In Vivo-In Vitro Rat Peripheral Lymphocyte Sister Chromatid Exchange Assay

Test Substance

Gasoline TAME Vapor Condensate

Author

Ramadevi Gudi, Ph.D.

Study Completion Date

August 28, 2008

Performing Laboratory

BioReliance
9630 Medical Center Drive
Rockville, Maryland 20850

Laboratory Study Number

AA40NX.130.BTL

Subcontractor's Sponsor Project Number

00-6128

Subcontractor's Sponsor

Huntingdon Life Sciences
Princeton Research Center (PRC)
Mettlers Road
East Millstone, New Jersey 08875-2360

STATEMENT OF COMPLIANCE

The Sister Chromatid Exchange BioReliance Study No. AA40NX.130.BTL was conducted in compliance with 79.60, CFR Vol. 59, No. 122, 27 June 1994. This study was performed according to protocol and BioReliance's Standard Operating Procedure for Sister Chromatid Exchange Assay with the following exceptions:

> The identity, strength, purity and composition or other characteristics to define the positive control article has not been determined by the testing facility. The positive control article has been characterized as per the Certificate of Analysis on file with the testing facility.
>
> The stability of the positive control article has not been determined by the testing facility.
>
> Analyses to determine the uniformity (as applicable) or concentration of the positive control mixture were not performed by the testing facility.
>
> The stability of the positive control article mixture has not been determined by the testing facility.

Ramadevi Gudi — 28 Aug 2008

Ramadevi Gudi, Ph.D.
Principal Investigator
BioReliance

Date

6 Oct 11

Gary M. Hoffman, B.A., D.A.B.T.
Study Director
Huntingdon Life Sciences

Date

Quality Assurance Statement

Study Title: IN VIVO-IN VITRO RAT PERIPHERAL LYMPHOCYTE SISTER CHROMATID EXCHANGE ASSAY

Study Number: AA40NX.130.BTL

Principal Investigator: Ramadevi Gudi, Ph.D.

Study Director: Gary Hoffman

Quality Assurance performed the inspections listed below for this study. Verification of the study protocol was also performed and documented by QA. Procedures, documentation, equipment records, etc., were examined in order to assure that the study was performed in accordance with the U.S. EPA Good Laboratory Practice Regulations (79.60, CFR Vol. 59, No. 122, 27 June 1994), and to assure that the study was conducted according to the protocol and relevant Standard Operating Procedures.

The following are the inspection dates, phases inspected, and report dates of QA inspections of this study.

Inspect On: 06-Sep-01 - 06-Sep-01 To Study Dir 06-Sep-01 To Mgmt 10-Jan-02
Phase: Preparation and staining of slides

Inspect On: 16-Dec-01 - 19-Dec-01 To Study Dir 19-Dec-01 To Mgmt 10-Jan-02
Phase: Draft Report

Inspect On: 28-Aug-08 - 28-Aug-08 To Study Dir 28-Aug-08 To Mgmt 28-Aug-08
Phase: Draft to Final Report

This report describes the methods and procedures used in the study and the reported results accurately reflect the raw data of the study.

Allison Schaefer 28/Aug/2008

Allison Schaefer, BS — DATE
QUALITY ASSURANCE

SPONSOR'S QUALITY ASSURANCE STATEMENT

Listed below are the dates that this study was inspected by the Quality Assurance Unit of Huntingdon Life Sciences, East Millstone, New Jersey, and the dates that findings were reported to the Study Director and Management. This report reflects the raw data as far as can be reasonably established.

Type of Inspection	Date(s) of Inspection	Reported to Study Director and Management
Facility Inspection	8 Nov 00	11 Nov 00
GLP Protocol Review	20,24 Apr 01	24 Apr 01
Exposure and Monitoring	2 Aug 01	2 Aug 01
Positive Control Genotoxicity Dose Administration	29 Aug 01	29 Aug 01
Genotoxicity Necropsy and Training Records	30 Aug 01	31 Aug 01
Subcontractor Final Report	22-25 Feb 02	26 Feb 02
Final Report Review and Protocol Amendments 1-5	5-7 Jan 09	9 Jan 09
Protocol Amendment 6	11 Aug 11	11 Aug 11

Fran Jannone

Fran Jannone, B.A., RQAP-GLP
Quality Assurance Group Leader

18 Aug 11
Date

SIGNATURE PAGE

SCIENTIST

The following Scientist was responsible for the overall conduct of this study:

Ramadevi Gudi — 28 Aug 2008

Ramadevi Gudi, Ph.D.
Principal Investigator
BioReliance

Date

SCIENTIFIC REVIEW

The following Scientists have reviewed and approved this report:

Valentine D. Wagner, III — 28 Aug 2008

Study Management
BioReliance

Date

6 Oct 11

Gary M. Hoffman, B.A., DABT
Study Director
Huntingdon Life Sciences

Date

In Vivo-In Vitro Rat Peripheral Lymphocyte Sister Chromatid Exchange Assay

FINAL REPORT

Subcontractor's Sponsor:	**Huntingdon Life Sciences** **Princeton Research Center (PRC)** **Mettlers Road** **East Millstone, New Jersey 08875-2360**
Study Director:	**Gary Hoffman, B.A., DABT**
Performing Laboratory:	**BioReliance** **9630 Medical Center Drive** **Rockville, Maryland 20850**
Test Substance I.D.:	**Gasoline TAME Vapor Condensate**
Sponsor Project Number:	**00-6128**
BioReliance Study No.:	**AA40NX.130.BTL**
Experimental Start Date for SCE:	**August 30, 2001**
Experimental Completion Date for SCE:	**October 27, 2001**

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SUMMARY

The test substance, Gasoline TAME Vapor Condensate, was tested in the rat peripheral lymphocyte sister chromatid exchange (SCE) assay following inhalation exposure of rats.

Information on test system, experimental design and methodology will be provided by Huntingdon Life Sciences. All in vivo portions of the study, including inhalation exposures were performed by Huntingdon Life Sciences.

Rats were exposed by inhalation to negative (air) control, 2,000; 10,000 and 20,000 mg/m^3 of Gasoline TAME Vapor Condensate for 4 weeks (5 days exposure per week). One additional group of animals (5 males and 5 females) was dosed with 5 mg/kg of cyclophosphamide (CP, positive control) by intraperitoneal injection 24 hours prior to blood collection. BioReliance personnel collected rat blood samples at 24 hours after the end of a 4 week (5 days per week) exposure period. Rat blood samples were cultured and processed for the SCE assay at a BioReliance facility.

A minimum of 25 second division metaphases per animal were scored for SCEs. At least 100 consecutive metaphases per animal were scored for the number of cells in first-, second-, or third-division metaphase for each animal as an indictor of toxicity (cell cycle delay). At least 1000 cells were scored for mitotic index per animal. A one-tailed Dunnett's t test for multiple comparisons was performed to compare the SCE frequency of test exposure levels to the negative control frequency. A statistically significant increase ($p \leq 0.05$) in SCE frequency was observed in males and females in the 20,000 mg/m^3 group exposed to Gasoline TAME Vapor Condensate. Regression analysis (trend analysis) was also positive ($p \leq 0.05$) for a dose response in both males and females.

Based on the findings of this study, the test substance, Gasoline TAME Vapor Condensate, was concluded to be suspect for the induction of sister chromatid exchanges in rat peripheral lymphocytes.

PURPOSE

The purpose of this study was to evaluate the potential of Gasoline TAME Vapor Condensate to induce SCEs in rat peripheral lymphocytes following inhalation exposures.

CHARACTERIZATION OF TEST AND CONTROL SUBSTANCES

Information regarding test substance and negative control and their characterizations will be provided by Huntingdon Life Sciences.

Cyclophosphamide (CP, CAS # 6055-19-2, lot number 108H0568, expiration 6 October 2003, white powder, storage 2-8°C, purity 99.2%), was obtained from the Sigma Chemical Company St. Louis, MO (responsible for its characterization), CP was shipped from BioReliance on 27 August 2001, received at Huntingdon Life Sciences on August 28, 2001 and was dissolved and diluted in sterile distilled water at Huntingdon Life Sciences to stock concentrations of 0.5 mg/mL for use as the positive control for the SCE study.

MATERIALS AND METHODS

Test System

Information on the test system will be provided by Huntingdon Life Sciences.

Sister Chromatid Exchange Assay

Peripheral blood lymphocytes were obtained from Sprague-Dawley rats that were exposed with negative (air) control, 2000, 10,000 and 20,000 mg/m^3 of Gasoline TAME Vapor Condensate or positive control (5 mg/kg of CP injected IP at 10 mL/kg, 24 hours prior to sacrifice). Animals were anesthetized with isoflurane by inhalation exposure. Blood samples were collected into sodium heparin tubes from the abdominal aorta by BioReliance personnel on site at Huntingdon Life Sciences. The blood samples were transported to BioReliance on the day of collection on ice packs.

Cell Culture and Collection of Metaphase Cells

Within 24 hours after blood collection, the whole blood samples were cultured in duplicates per animal in RPMI 1640 culture medium with 25 mM Hepes buffer supplemented, 10% fetal bovine serum, antibiotics (pencillin G, 100 u/ml and streptomycin sulfate, 0.1 mg/mL), 20 µg/mL phytohemagglutinin and an additional 2 mM L-glutamine. Cultures were initiated by inoculating 0.5 mL of whole blood per 5 mL of complete medium in T-25 sterile disposable tissue culture flasks and incubated at 37°C. Approximately 21 hours after initiation of the cultures, the cells were exposed to 5 µg/mL of bromodeoxyuridine (BrdU, Sigma Co., St. Louis, MO). At approximately 68 hours, 0.2 µg/mL of colcemid was added to each flask and incubated for approximately 4 hours. At

approximately 72 hours, the cells were collected by centrifugation at approximately 1200 rpm for about 5 minutes. The cell pellet was resuspended in 5 mL 0.075 M KCl and incubated at 37±1°C for 20 minutes. At the end of the KCl treatment and immediately prior to centrifuging, the cells were gently mixed and approximately 0.5 mL of fixative (methanol:glacial acetic acid, 3:1 v/v) was added to each tube. The cells were collected by centrifugation, the supernatant aspirated, and the cells were fixed with two washes with approximately 3-5 mL of fixative and stored in fixative overnight or longer at approximately 2-6°C, as per protocol.

Slide Preparation

To prepare slides, the fixed cells were centrifuged at approximately 1200 rpm for 5 minutes, the supernatant was aspirated, and the cells were resuspended in 1 mL fresh fixative. The cells were collected by centrifugation and the supernatant aspirated, leaving 0.1 to 0.3 mL fixative above the cell pellet. One to two drops of the cell suspension was dropped onto a glass slide and allowed to air dry overnight. Slides were identified by the study number, animal number, replicate tube designation and date prepared. The dried slides were then stained.

Slide Staining

The slides were stained by using a modified flourescence-plus-Giemsa technique. Hoechst 33258 stain, 5 µg/mL, was prepared fresh by diluting 40 mL of Hoechst 33258 stock stain 50 µg/mL in distilled water, with 360 mL phosphate buffer, pH 6.8. The slides were stained in Hoechst, 5µg/mL, for 10 minutes, rinsed in deionized water and dried between sheets of bibulous paper. Three drops of phosphate buffer was placed on each slide and the buffer covered with a coverslip. The slides were then placed on a slide warmer maintained at approximately 60°C ± 2°C and covered with a "Black Ray" lamp with 15 watt tubes for 4-6 minutes. The coverslips will then be removed, the slides rinsed in deionized water and counterstained with 5% Giemsa solution (freshly prepared by diluting 20 mL Giemsa in 380 mL deionized water) for 6-10 minutes. The slides were rinsed in deionized water and left to air dry.

Evaluation of SCEs

Slides were coded using random numbers by an individual not involved with the scoring process. Metaphase cells were examined under oil immersion without prior knowledge of treatment groups. Whenever possible, a minimum of 25 second division metaphases per animal were scored for SCEs. At least 100 consecutive metaphase cells were scored for the number of cells in first-, second- or third-division metaphase for each animal as an indicator of toxicity (cell cycle delay) (BioReliance SOP# OPGT0442 and OPGT0336). At least 1000 cells were scored for mitotic index per animal.

Evaluation of Test Results

The number of SCEs per second-division metaphase cell were presented for each group along with the range of SCEs/metaphase for animals within a group. SCE frequencies as the grand mean ± standard deviation were presented for each group. The Average Generation

Time (AGT) is estimated as: = Number of hours in BrdU X 100/ (number M_1 cells x 1)+(number M_2 cells x 2)+(number M_3 cells x 3)]. A regression analysis (trend analysis) and a one-tailed Dunnett's t test for multiple comparisons was performed to compare the SCE frequency of test exposure levels to the negative control frequency, and if $p \leq 0.05$, that exposure level was considered significant. The conclusion of the study was based on the Principal Investigator's evaluation of all the data, including the biological as well as statistical significance. The following criteria were used as guidelines in evaluation of this study:

The test substance was considered positive if an exposure-level responsive and statistically significant increase is observed over a minimum of two exposure levels. A statistically significant increase at the high exposure level with an exposure-level responsive although not statistically significant increase at lower exposure levels was assessed as suspect. A statistically significant increase at one or more exposure levels with no evidence of a exposure level response was assessed as equivocal or as negative according to the magnitude of the response and the number of exposure levels affected.

Criteria for Determination of a Valid Test

The mean SCEs/cell/animal for the positive control animals must be statistically increased relative to the negative control.

Deviations

No known deviations from the protocol or assay-method SOPs occurred during the conduct of this study.

Archives

All raw data, the protocol and all reports generated at BioReliance will be maintained according to Standard Operating Procedure OPQP3040 by the BioReliance RAQA unit headquartered at: BioReliance, 14920 Broschart Road, Rockville, MD 20850. After submission of the final report, all of the above will be shipped to Huntingdon Life Sciences to be archived. All study materials returned to Huntingdon Life Sciences will first be copied and the copy will be retained in the BioReliance archives for a minimum of 10 years. All specimens, such as microscope slides, will be held in storage as long as the quality affords evaluation at BioReliance until the final report is issued in accordance with the relevant Good Laboratory Practice Regulations.

RESULTS AND DISCUSSION

Sister chromatid exchanges involve a symmetrical exchange at one locus, between sister chromatids of the chromosomes. Giemsa method for the differential staining of sister chromatids by Perry and Wolff (1974a) Wolff and Perry (1974) have made it possible to distinguish between sister chromatids. These techniques involve exposing cells to 5-bromodeoxyuridine (BrdU) for at least 2 rounds of replication so that M2 chromosomes consist of one chromatid unifilarly substituted with BrdU and the other bifilarly substituted. The chromatids of such chromosomes stain differentially with Giemsa stain. The observed SCE represents a recombination between DNA helices in the replicating chromosomes and

used as a sensitive cytological end point which correlates with DNA damage. The test substance, Gasoline TAME Vapor Condensate, was tested in the rat peripheral lymphocyte sister chromatid exchange (SCE) assay following inhalation exposure of rats.

Information on test system, experimental design and methodology will be provided by Huntingdon Life Sciences. All in vivo portions of the study, including inhalation exposures, were performed by Huntingdon Life Sciences.

Rats were exposed by inhalation to negative (air) control, 2000, 10,000 and 20,000 mg/m^3 of Gasoline TAME Vapor Condensate for 4 weeks (5 days exposure per week). One additional group of animals (5 males and 5 females) were dosed with 5 mg/kg cyclophosphamide (CP, positive control) by intraperitoneal injection 24 hours prior to blood collection. Animals dosed at 5 mg/kg of CP were used as the positive control group for the SCE assay. BioReliance personnel collected rat blood samples at 24 hours after the end of a 4 week (5 days per week) exposure period. Rat blood samples were cultured and processed for the SCE assay in a BioReliance facility.

A minimum of 25 second division metaphases per animal were scored for SCEs. At least 100 consecutive metaphases per animal were scored for the number of cells in first-, second-, or third-division metaphase for each animal as an indictor of toxicity (cell cycle delay). At least 1000 cells were scored for mitotic index per animal. The number of SCEs per second-division metaphase cell were presented for each animal (both males and females) in Tables 1 to 5. The number of M1, M2 and M3 cells out of 100 metaphases and the mitotic index out of 1000 cells per animal are also presented in Tables 1 to 5. The range and the average SCEs per animal and the SCE frequencies as the grand mean±standard deviation per group for males are presented in Table 6 and for females in Table 7. The Average Generation Time (AGT) and the mitotic index per group for males are presented in Table 6 and for females in Table 7. A one-tailed Dunnett's t test for multiple comparisons was performed to compare the average SCE frequency of test exposure levels to the negative control frequency. A statistically significant increase in SCE frequency was observed in males and females in the 20,000 mg/m^3 group exposed to Gasoline TAME Vapor Condensate. Regression analysis (trend analysis) was also positive ($p \leq 0.05$) for a dose response in both males and females. The positive control group (5 mg/kg) induced statistically significant increases in SCE frequency in both males and females. No appreciable difference was observed in AGT and in mitotic index in the test substance groups relative to the negative control group.

CONCLUSION

The positive control fulfilled the requirements for a valid test.

Under the conditions of the assay described in this report, based on the findings of this study, the test substance, Gasoline TAME Vapor Condensate, was concluded to be suspect for the induction of sister chromatid exchanges in rat peripheral lymphocytes.

REFERENCES

Evans, H.J. (1976) Cytological methods for detecting chemical mutagens, in: A. Hollaender (Ed.), Chemical Mutagens, Principles and Methods for their Detection, vol. 4. Plenum Press, New York, NY.

MINITAB User's guide 2: data Analysis and Quality Tools, Release 12 for Windows® 95 WndowsNT™ February 1998 Chapter 3: Analysis of Variance, 3-1 to3-7.

Perry P. and Wolff S. (1974a) New Giemsa method for the differential staining of sister chromatid, Nature (London) 251, 156-158

Wolff S. and Perry P. (1974) Differential Giemsa staining of sister chromatid and the study of sister chromatid exchanges without autoradiography. Chromosoma 48, 341-353

TABLE 1

Number of Sister Chromatid Exchanges per cell in Negative Air Control Group
Air only
Male and Female Rats

	Number of SCEs									
	Animal Number [1]									
Cell#	1031	1032	1033	1034	1035	1541	1542	1543	1544	1545
1	4	6	5	4	7	6	8	5	4	8
2	5	6	7	8	6	6	8	4	8	5
3	10	6	6	9	13	6	5	7	10	5
4	5	13	8	5	8	8	6	5	6	6
5	6	4	9	6	6	10	11	4	7	7
6	7	5	7	6	6	8	5	7	8	5
7	9	6	6	7	7	7	8	6	8	7
8	8	9	8	8	6	6	10	8	6	5
9	3	14	6	8	7	8	10	10	8	6
10	9	9	5	5	8	10	11	5	7	7
11	6	5	3	6	5	8	6	8	6	4
12	5	12	8	7	6	6	7	9	8	5
13	8	7	8	6	7	3	5	6	5	7
14	5	7	6	5	8	11	4	5	8	6
15	6	5	8	4	7	6	5	6	10	5
16	3	10	9	5	8	8	6	7	8	6
17	9	5	10	6	5	6	7	8	6	4
18	8	10	7	5	8	7	8	5	7	7
19	6	9	6	8	8	8	7	8	5	7
20	6	7	5	8	6	6	7	5	8	5
21	5	8	8	6	4	5	6	7	10	6
22	4	10	5	7	6	4	5	7	4	7
23	6	7	10	8	8	8	6	9	6	9
24	8	6	8	5	7	9	7	4	5	4
25	6	5	6	8	5	10	6	11	4	4
#M1 Cells[2]	31	35	30	34	30	33	30	30	33	30
# M2 Cells[2]	39	35	35	28	39	32	31	32	31	35
#M3 Cells[2]	30	30	35	32	31	35	39	38	36	35
MI (%)[3]	5.0	7.0	6.0	4.0	4.0	6.0	5.0	7.0	5.0	4.0

[1] Animal numbers 1031-1035 are males and 1541-1545 are females.

[2] Number of M1, M2 and M3 cells are obtained from 100 metaphases.

[3] MI = mitotic index; number mitotic figures x 100/1000 cells counted/animal.

TABLE 2

Number of Sister Chromatid Exchanges per cell at 2000 mg/m^3 of Gasoline TAME Vapor Condensate Male and Female Rats

	Number of SCEs									
	Animal Number [1]									
Cell#	2021	2022	2023	2024	2025	2531	2532	2533	2534	2535
1	4	9	4	6	8	5	9	6	5	12
2	5	7	5	5	6	4	7	6	6	8
3	5	4	1	4	5	5	9	5	5	10
4	6	6	6	6	8	6	8	5	5	6
5	6	6	6	5	6	7	8	6	4	7
6	5	9	2	4	9	5	8	5	5	6
7	6	10	5	5	5	4	6	4	6	8
8	7	6	12	6	6	5	6	6	6	5
9	5	6	4	5	6	6	8	5	6	6
10	7	7	5	11	8	7	6	6	5	8
11	6	6	5	5	5	6	5	8	5	5
12	4	8	4	6	6	7	8	9	6	4
13	4	7	5	5	8	6	7	6	7	10
14	4	6	4	4	9	5	6	5	5	6
15	5	5	6	5	10	5	5	7	6	8
16	4	6	6	6	5	6	6	4	5	6
17	6	8	7	7	6	5	5	5	8	6
18	6	8	4	6	6	6	4	6	10	5
19	5	8	5	5	6	5	7	6	6	6
20	6	6	6	6	6	8	5	6	6	6
21	7	7	5	5	7	8	6	7	7	7
22	8	8	4	5	5	5	7	4	6	8
23	6	10	4	4	7	7	8	6	7	5
24	7	7	5	5	8	6	5	5	8	6
25	7	7	4	4	7	6	8	6	6	6
#M1 Cells[2]	30	40	35	35	40	36	40	35	33	33
# M2 Cells[2]	33	41	34	35	30	30	34	30	37	36
#M3 Cells[2]	37	19	31	30	22	24	26	35	30	31
MI (%)[3]	3.0	4.0	4.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0

[1] Animal numbers 2021-2025 are males and 2531-2535 are females.

[2] Number of M1, M2 and M3 cells are obtained from 100 metaphases.

[3] MI = mitotic index; number mitotic figures x 100/1000 cells counted/animal.

TABLE 3

Number of Sister Chromatid Exchanges per cell at 10,000 mg/m^3 of Gasoline TAME Vapor Condensate Male and Female Rats

	Number of SCEs									
	Animal Number [1]									
Cell#	3021	3022	3023	3024	3025	3531	3532	3533	3534	3535
1	5	8	10	6	8	14	6	7	4	9
2	5	5	8	10	9	6	7	7	6	5
3	5	5	3	6	10	7	8	7	6	6
4	4	6	4	10	6	8	10	6	5	7
5	5	7	6	6	5	3	9	5	6	8
6	6	8	8	8	4	5	7	6	5	9
7	7	7	9	9	5	10	5	8	6	9
8	8	6	10	10	6	8	6	7	8	8
9	5	5	8	6	5	6	8	7	6	5
10	9	9	6	7	6	5	9	9	8	4
11	8	8	7	8	9	10	6	6	9	5
12	6	9	5	9	8	6	8	4	6	6
13	7	6	4	7	10	7	9	7	5	5
14	8	5	3	4	7	8	10	7	4	6
15	9	4	8	6	11	5	6	6	8	6
16	5	8	6	7	6	6	5	7	6	7
17	7	9	3	8	7	7	6	5	5	5
18	6	5	5	9	8	8	7	4	4	6
19	8	6	8	10	9	6	11	8	5	7
20	9	7	9	10	10	9	10	10	6	7
21	9	8	6	10	8	5	9	8	10	6
22	8	10	7	6	6	6	6	9	5	7
23	5	7	5	8	5	8	8	6	6	6
24	6	8	5	9	4	9	5	7	11	7
25	7	9	4	5	6	7	8	5	8	7
#M1 Cells[2]	38	33	40	30	34	35	30	31	44	40
# M2 Cells[2]	40	40	30	38	30	36	36	38	30	41
#M3 Cells[2]	22	27	30	32	36	29	34	31	26	19
MI (%)[3]	4.0	3.0	6.0	3.0	4.0	4.0	4.0	3.4	4.0	3.0

[1] Animal numbers 3021-3025 are males and 3531-3535 are females.

[2] Number of M1, M2 and M3 cells are obtained from 100 metaphases.

[3] MI = mitotic index; number mitotic figures x 100/1000 cells counted/animal.

TABLE 4

Number of Sister Chromatid Exchanges per cell at 20,000 mg/m^3 of Gasoline TAME Vapor Condensate Male and Female Rats

	Number of SCEs									
	Animal Number [1]									
Cell#	4031	4032	4033	4034	4035	4541	4542	4543	4544	4545
1	11	6	6	7	6	4	6	16	8	9
2	5	8	6	9	9	6	6	6	9	5
3	5	9	6	6	8	11	7	12	10	6
4	13	7	7	7	10	9	8	6	6	8
5	9	8	8	6	11	8	8	7	7	5
6	11	6	10	5	12	5	5	3	8	8
7	8	5	6	9	6	6	6	4	9	9
8	5	10	7	10	5	7	7	8	8	10
9	5	7	8	9	6	5	9	13	11	5
10	12	8	9	10	8	8	5	5	10	8
11	9	8	10	8	10	10	10	6	8	12
12	15	6	11	9	5	8	8	7	5	16
13	8	12	12	10	6	9	9	10	6	4
14	6	8	6	8	5	12	10	11	7	5
15	6	10	8	6	10	8	6	12	8	10
16	8	12	10	5	8	9	10	8	6	5
17	9	9	8	6	9	10	6	5	7	7
18	6	12	11	7	6	5	8	6	8	8
19	7	7	12	8	7	4	10	7	8	10
20	8	8	10	7	10	6	9	8	9	7
21	9	9	13	6	11	5	6	10	10	8
22	6	10	8	5	10	8	7	6	6	5
23	9	8	9	8	8	5	8	7	7	9
24	10	8	10	9	7	8	9	5	8	8
25	11	8	8	10	5	6	6	7	9	8
#M1 Cells[2]	26	38	30	31	41	31	25	40	30	48
# M2 Cells[2]	44	41	33	35	38	40	42	35	40	30
#M3 Cells[2]	30	21	37	34	21	29	33	25	30	22
MI (%)[3]	3.6	4.0	4.2	4.3	2.0	3.0	4.0	3.0	5.0	3.5

[1] Animal numbers 4031-4035 are males and 4541-4545 are females.

[2] Number of M1, M2 and M3 cells are obtained from 100 metaphases.

[3] MI = mitotic index; number mitotic figures x 100/1000 cells counted/animal.

TABLE 5

Number of Sister Chromatid Exchanges per cell at 5 mg/kg Cyclophosphamide Male and Female Rats

	Number of SCEs									
	Animal Number [1]									
Cell#	5031	5032	5033	5034	5035	5541	5542	5543	5544	5545
1	14	15	18	22	16	16	23	20	20	26
2	17	24	27	21	12	12	21	18	21	20
3	16	20	17	24	18	18	20	20	18	21
4	16	21	21	20	18	19	16	19	20	22
5	17	22	20	21	20	20	20	12	24	24
6	14	17	24	20	21	17	18	18	20	16
7	19	15	26	23	16	18	18	20	18	18
8	20	14	17	28	21	17	21	21	17	21
9	16	18	18	20	21	16	26	22	10	21
10	17	24	19	20	20	12	20	25	18	23
11	18	20	16	22	22	17	24	24	26	20
12	20	21	16	24	20	16	20	22	21	20
13	19	22	14	24	16	21	21	23	20	21
14	17	18	14	25	18	18	20	24	19	18
15	14	17	20	26	20	21	22	20	18	16
16	25	10	22	18	22	20	21	21	28	21
17	20	18	18	21	24	17	20	22	23	24
18	17	21	21	20	20	16	22	18	24	20
19	18	22	24	18	20	15	20	17	20	21
20	16	18	20	23	21	16	18	16	21	22
21	17	20	21	20	20	21	17	20	20	20
22	19	21	22	21	21	18	12	21	22	20
23	18	20	23	23	20	20	12	20	21	23
24	20	22	23	20	20	21	18	18	21	20
25	21	19	20	23	22	20	20	20	20	21
#M1 Cells[2]	50	48	40	40	44	48	40	43	38	40
# M2 Cells[2]	35	35	31	38	35	20	35	30	30	38
#M3 Cells[2]	15	17	29	22	21	32	25	27	32	22
MI (%)[3]	7.0	6.0	3.0	6.0	4.0	3.0	4.0	5.0	3.0	6.0

[1] Animal numbers 5031-5035 are males and 5541-5545 are females.

[2] Number of M1, M2 and M3 cells are obtained from 100 metaphases.

[3] MI = mitotic index; number mitotic figures x 100/1000 cells counted/animal.

TABLE 6

Summary of Sister Chromatid Exchange Data – Gasoline TAME Vapor Condensate Male Rats

Sister Chromatid Exchange data																		
Treatment	Animal #	# of Metaphases Scored	Total # of SCEs per Animal	Range of SCEs per Animal Min		Max	Mean SCEs per cell	Group Range Min		Max	Group Mean ± Std. Dev.			AGT per Animal	AGT per Group	MI per Group
Air	1031	25	157	3	-	10	6.3							26		
	1032	25	191	4	-	14	7.6							26		
	1033	25	174	3	-	10	7.0	3	to	14	6.8	±	2.0	25	26	5.2
	1034	25	160	4	-	9	6.4							27		
	1035	25	172	4	-	13	6.9							25		
Gasoline TAME Vapor Condensate 2000 mg/m^3	2021	25	141	4	-	8	5.6							25		
	2022	25	177	4	-	10	7.1							28		
	2023	25	124	1	-	12	5.0	1	to	12	6.0*	±	1.7	26	27	3.4
	2024	25	135	4	-	11	5.4							26		
	2025	25	168	5	-	10	6.7							31		
Gasoline TAME Vapor Condensate 10,000 mg/m^3																
	3021	25	167	4	-	9	6.7							28		
	3022	25	175	4	-	10	7.0							26		
	3023	25	157	3	-	10	6.3	3	to	11	7.0*	±	1.9	27	26	4.0
	3024	25	194	4	-	10	7.8							25		
	3025	25	178	4	-	11	7.1							25		
Gasoline TAME Vapor Condensate 20,000 mg/m^3																
	4031	25	211	5	-	15	8.4							25		
	4032	25	209	5	-	12	8.4							28		
	4033	25	219	6	-	13	8.8	5	to	15	8.2‡*	±	2.1	25	26	3.6
	4034	25	190	5	-	10	7.6							25		
	4035	25	198	5	-	12	7.9							28		
Cyclophosphamide 5 mg/kg																
	5031	25	445	14	-	25	17.8							31		
	5032	25	479	14	-	24	19.2							30		
	5033	25	501	14	-	27	20.0	12	to	28	19.7‡	±	3.1	27	29	5.2
	5034	25	547	18	-	28	21.9							28		
	5035	25	489	12	-	24	19.6							29		

* The standard deviation was calculated using the data of all 125 metaphases scored.

‡ = one-tailed Dunnett's t test ($p \leq 0.05$); * = Regression analysis ($p \leq 0.05$)

MI=Mitotic Index: (Number of cells in mitosis out of 1000 cells)

AGT=Average generation time: Number of hours in BrdU X 100/ (number M_1 cells x 1)+(number M_2 cells x 2)+(number M_3 cells x 3)

TABLE 7

Summary of Sister Chromatid Exchange Data – Gasoline TAME Vapor Condensate Female Rats

Sister Chromatid Exchange data																		
															AGT		MI
Treatment	Animal #	# of Metaphases Scored	Total # of SCEs per Animal	Range of SCEs per Animal Min		Max	Mean SCEs per cell	Group Range Min		Max	Group Mean ± Std. Dev.			per Animal	per Group	per Group
Air	1541	25	180	3	-	11	7.2							25		
	1542	25	174	4	-	11	7.0							24		
	1543	25	166	4	-	11	6.6	3	to	11	6.7	±	1.8	25	25	5.4
	1544	25	172	4	-	10	6.9							25		
	1545	25	147	4	-	9	5.9							25		
Gasoline TAME Vapor Condensate 2000 mg/m^3	2531	25	145	4	-	8	5.8							30		
	2532	25	167	4	-	9	6.7							27		
	2533	25	144	4	-	9	5.8	4	to	12	6.2*	±	1.4	26	27	3.4
	2534	25	151	4	-	10	6.0							26		
	2535	25	170	4	-	12	6.8							26		
Gasoline TAME Vapor Condensate 10,000 mg/m^3																
	3531	25	179	3	-	14	7.2							26		
	3532	25	189	5	-	11	7.6							25		
	3533	25	168	4	-	10	6.7	3	to	14	6.9*	±	1.8	26	27	3.7
	3534	25	158	4	-	11	6.3							28		
	3535	25	163	4	-	9	6.5							28		
Gasoline TAME Vapor Condensate 20,000 mg/m^3																
	4541	25	182	4	-	12	7.3							26		
	4542	25	189	5	-	10	7.6							25		
	4543	25	195	3	-	16	7.8	3	to	16	7.7‡*	±	2.3	28	27	3.7
	4544	25	198	5	-	11	7.9							26		
	4545	25	195	4	-	16	7.8							29		
Cyclophosphamide 5 mg/kg																
	5541	25	442	12	-	21	17.7							28		
	5542	25	490	12	-	26	19.6							28		
	5543	25	501	12	-	25	20.0	10	to	28	19.7‡	±	3.0	28	28	4.2
	5544	25	510	10	-	28	20.4							26		
	5545	25	519	16	-	26	20.8							28		

* The standard deviation was calculated using the data of all 125 metaphases scored.

‡ = one-tailed Dunnett's t test ($p \leq 0.05$); * = Regression analysis ($p \leq 0.05$)

MI=Mitotic Index: (Number of cells in mitosis out of 1000 cells)

AGT=Average generation time: Number of hours in BrdU X 100/ (number M_1 cells x 1)+(number M_2 cells x 2)+(number M_3 cells x 3)

Appendix A: Contracting Sponsor's Exposure Data and Animal Data

INDIVIDUAL ANIMAL DATA
ORGAN WEIGHTS
GASOLINE TAME VAPOR CONDENSATE
HLS STUDY NO.: 00-6128
SPONSOR STUDY NO.: 221-TAME-S

ANIMAL NO	GROUP	DOSE	SEX	BODY WGT (G)	SPLEEN (MG)	THYMUS (MG)	SPLEEN /%BODY WT	THYMUS /% BODY WT
1531	GI	AIR ONLY	F	284.5	681	400	0.240	0.140
1532	GI	AIR ONLY	F	260.2	495	551	0.190	0.210
1533	GI	AIR ONLY	F	254.5	587	596	0.230	0.230
1534	GI	AIR ONLY	F	254.8	554	349	0.220	0.140
1535	GI	AIR ONLY	F	273.2	714	573	0.260	0.210
1536	GI	AIR ONLY	F	237.3	653	381	0.280	0.160
1537	GI	AIR ONLY	F	264.0	597	527	0.230	0.200
1538	GI	AIR ONLY	F	256.3	574	485	0.220	0.190
1539	GI	AIR ONLY	F	239.9	509	373	0.210	0.160
1540	GI	AIR ONLY	F	231.9	502	281	0.220	0.120
2521	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	243.6	632	527	0.260	0.220
2522	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	265.9	786	796	0.300	0.300
2523	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	234.5	450	413	0.190	0.180
2524	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	245.2	465	366	0.190	0.150
2525	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	232.3	505	257	0.220	0.110
2526	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	279.3	633	624	0.230	0.220
2527	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	269.6	807	543	0.300	0.200
2528	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	250.4	704	537	0.280	0.210
2529	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	271.2	655	459	0.240	0.170
2530	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	227.6	591	448	0.260	0.200
3521	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	275.3	664	587	0.240	0.210
3522	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	251.3	676	454	0.270	0.180
3523	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	241.4	641	555	0.270	0.230
3524	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	260.5	655	144	0.250	0.060
3525	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	238.7	669	522	0.280	0.220
3526	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	242.5	631	580	0.260	0.240
3527	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	248.7	741	620	0.300	0.250
3528	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	247.2	503	509	0.200	0.210
3529	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	310.4	827	603	0.270	0.190
3530	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	302.9	750	449	0.250	0.150
4531	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	292.2	756	462	0.260	0.160
4532	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	229.7	588	504	0.260	0.220
4533	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	263.8	618	381	0.230	0.140
4534	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	244.1	627	473	0.260	0.190
4535	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	250.7	511	456	0.200	0.180
4536	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	264.1	714	484	0.270	0.180
4537	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	245.5	590	405	0.240	0.160
4538	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	238.2	627	433	0.260	0.180
4539	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	284.1	494	536	0.170	0.190
4540	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	245.5	651	550	0.270	0.220
5531	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	246.8	295	136	0.120	0.060
5532	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	236.6	308	104	0.130	0.040
5533	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	271.2	308	116	0.110	0.040
5534	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	235.3	328	108	0.140	0.050
5535	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	199.0	238	48	0.120	0.020
5536	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	264.6	292	113	0.110	0.040
5537	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	253.0	352	124	0.140	0.050
5538	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	184.0	179	101	0.100	0.050
5539	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	233.2	284	82	0.120	0.040
5540	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	261.3	330	129	0.130	0.050

KEY:
G=GRAMS, MG=MILLIGRAMS, M^3=CUBIC METER OF AIR, KG=KILOGRAMS, WT=WEIGHT

INDIVIDUAL ANIMAL DATA
AFC
GASOLINE TAME VAPOR CONDENSATE
HLS STUDY NO.: 00-6128
SPONSOR STUDY NO.: 211-TAME-S

ANIMAL NO	GROUP	DOSE	SEX	IGM AFC/10^6 SP.C.	IGM AFC/SPLEEN 10^3	CELLS/SPLEEN 10^7	SPLEEN WEIGHT(MG)	BODY WEIGHT(G)
1531	GI	AIR ONLY	F	1471	1044	70.98	681	285
1532	GI	AIR ONLY	F	1231	723	58.74	495	260
1533	GI	AIR ONLY	F	2822	1881	66.66	587	255
1534	GI	AIR ONLY	F	595	381	64.02	554	255
1535	GI	AIR ONLY	F	1129	888	78.66	714	273
1536	GI	AIR ONLY	F	1823	1179	64.68	653	237
1537	GI	AIR ONLY	F	604	378	62.58	597	264
1538	GI	AIR ONLY	F	3967	1890	47.64	574	256
1539	GI	AIR ONLY	F	610	282	46.20	509	240
1540	GI	AIR ONLY	F	1349	633	46.92	502	232
2521	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	1511	990	65.52	632	244
2522	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	1326	1314	99.12	786	266
2523	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	2374	1044	43.98	450	235
2524	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	1106	456	41.22	465	245
2525	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	2132	1287	60.36	505	232
2526	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	682	468	68.58	633	279
2527	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	967	750	77.58	807	270
2528	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	965	603	62.46	704	250
2529	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	414	255	61.62	655	271
2530	GII	2,000 MG/M^3 GASOLINE TAME VAPOR	F	1020	687	67.38	591	228
3521	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	814	597	73.38	664	275
3522	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1644	1080	65.70	676	251
3523	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1292	792	61.32	641	241
3524	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1400	819	58.50	655	261
3525	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1121	747	66.66	669	239
3526	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	2798	1692	60.48	631	243
3527	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	960	675	70.32	741	249
3528	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1926	831	43.14	503	247
3529	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	1466	1530	104.34	827	310
3530	GIII	10,000 MG/M^3 GASOLINE TAME VAPOR	F	416	321	77.10	750	303
4531	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	2052	1341	65.34	756	292
4532	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	2414	1341	55.56	588	230
4533	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	633	315	49.80	618	264
4534	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	1816	1035	57.00	627	244
4535	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	433	189	43.68	511	251
4536	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	1785	1287	72.12	714	264
4537	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	1426	741	51.96	590	246
4538	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	3217	1791	55.68	627	238
4539	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	654	267	40.80	494	284
4540	GIV	20,000 MG/M^3 GASOLINE TAME VAPOR	F	707	435	61.50	651	246
5531	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	12.12	295	247
5532	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	10.44	308	237
5533	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	12.00	308	271
5534	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	12.84	328	235
5535	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	8.10	238	199
5536	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	10.92	292	265
5537	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	9.06	352	253
5538	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	9.30	179	184
5539	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	8.34	284	233
5540	GV	50 MG/KG CYCLOPHOSPHAMIDE	F	0	0	10.98	330	261

KEY:
G=GRAMS, MG=MILLIGRAMS, M^3=CUBIC METER OF AIR, KG=KILOGRAMS

	Animal Exposure and Animal Data Preface	Appendix A

INTRODUCTION: The following is data generated at Huntingdon Life Sciences, East Millstone, NJ. The separately issued main study report should be referenced for details of the procedures used for test atmosphere generation/characterization and animal evaluations.

STUDY DATES:	Date of Animal Receipt:	19 July 2001
	Experimental Initiation Date:	2 August 2001 (in-life)
	Experimental Completion Date:	30 August 2001 (in-life)
	Draft Report Date:	28 February 2002

EXPOSURES AND IN-LIFE SUMMARY: The actual measured results during the exposures were comparable to the targeted exposure levels. There were no exposure-related effects seen in the test animals with regards to body weights and feed consumption.

TABLE OF CONTENTS

TABLES

Chamber Monitoring Results
Cumulative Exposure Record
Group IA - 0 mg/m³ (Air Control)

Day	Date	Exposure Number	Nominal (mg/m³)	Analytical Chamber Concentration Mean (mg/m³)	Individual (mg/m³)				Particle Size Determinations MMAD (μm)	GSD	TMC (mg/m³)	Chamber Environment Mean Temperature (°C)	Humidity (%)
37	2-Aug-01	1	0	0	0	0	0	0				24	47
38	3-Aug-01	2	0	0	0	0	0	0	1.281	1.730	2.50E-03	24	47
41	6-Aug-01	3	0	0	0	0	0	0				24	49
42	7-Aug-01	4	0	0	0	0	0	0				25	48
43	8-Aug-01	5	0	0	0	0	0	0				26	50
44	9-Aug-01	6	0	0	0	0	0	0				26	49
45	10-Aug-01	7	0	0	0	0	0	0	0.8679	1.733	6.82E-02	26	51
48	13-Aug-01	8	0	0	0	0	0	0				25	47
49	14-Aug-01	9	0	0	0	0	0	0				24	48
50	15-Aug-01	10	0	0	0	0	0	0				24	48
51	16-Aug-01	11	0	0	0	0	0	0	0.9270	1.631	3.16E-03	24	48
52	17-Aug-01	12	0	0	0	0	0	0				24	50
55	20-Aug-01	13	0	0	0	0	0	0				25	48
56	21-Aug-01	14	0	0	0	0	0	0				25	47
57	22-Aug-01	15	0	0	0	0	0	0				25	48
58	23-Aug-01	16	0	0	0	0	0	0				25	51
59	24-Aug-01	17	0	0	0	0	0	0	1.095	2.289	4.97E-03	25	48
62	27-Aug-01	18	0	0	0	0	0	0				26	46
63	28-Aug-01	19	0	0	0	0	0	0				24	48
64	29-Aug-01	20	0	0	0	0	0	0				24	47
		Mean	0		0				1.043	1.846	1.97E-02	24.8	48.3
		S.D.	0		0				0.186	0.299	3.23E-02	0.8	1.4

Chamber Monitoring Results
Cumulative Exposure Record
Group IB - 0 mg/m^3 (Air Control)

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration: Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations: MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment: Mean Temperature (°C)	Mean Humidity (%)
37	2-Aug-01	1	0	0	0	0	0	0				25	50
38	3-Aug-01	2	0	0	0	0	0	0	1.163	1.719	2.68E-03	25	49
41	6-Aug-01	3	0	0	0	0	0	0				25	51
42	7-Aug-01	4	0	0	0	0	0	0				24	53
43	8-Aug-01	5	0	0	0	0	0	0				24	52
44	9-Aug-01	6	0	0	0	0	0	0				24	51
45	10-Aug-01	7	0	0	0	0	0	0	0.8617	1.638	6.21E-02	25	53
48	13-Aug-01	8	0	0	0	0	0	0				24	49
49	14-Aug-01	9	0	0	0	0	0	0				24	49
50	15-Aug-01	10	0	0	0	0	0	0				25	51
51	16-Aug-01	11	0	0	0	0	0	0	0.9082	1.518	3.36E-03	24	51
52	17-Aug-01	12	0	0	0	0	0	0				24	51
55	20-Aug-01	13	0	0	0	0	0	0				25	51
56	21-Aug-01	14	0	0	0	0	0	0				24	49
57	22-Aug-01	15	0	0	0	0	0	0				24	51
58	23-Aug-01	16	0	0	0	0	0	0				24	51
59	24-Aug-01	17	0	0	0	0	0	0	0.8564	1.629	3.35E-03	24	51
62	27-Aug-01	18	0	0	0	0	0	0				24	49
63	28-Aug-01	19	0	0	0	0	0	0				25	53
64	29-Aug-01	20	0	0	0	0	0	0				25	50
		Mean	**0**		**0**				**0.947**	**1.626**	**1.79E-02**	**24.4**	**50.8**
		S.D.	**0**		**0**				**0.146**	**0.083**	**2.95E-02**	**0.5**	**1.3**

Chamber Monitoring Results
Cumulative Exposure Record
Group IIA - 2,000 mg/m^3

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration: Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations: MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment: Mean Temperature (°C)	Mean Humidity (%)
37	2-Aug-01	1	2570	2145	2670	2140	1810	1960				23	46
38	3-Aug-01	2	2330	1905	1940	1750	1970	1960	12.51	3.372	7.50E-03	23	46
41	6-Aug-01	3	2570	1953	2270	2050	1710	1780				23	47
42	7-Aug-01	4	2360	1933	2090	1990	1770	1880				24	45
43	8-Aug-01	5	2310	1873	1780	1920	1770	2020				24	46
44	9-Aug-01	6	2340	2060	2190	2020	2100	1930				24	46
45	10-Aug-01	7	2380	1920	2030	1950	1770	1930	0.8634	1.724	5.97E-02	25	49
48	13-Aug-01	8	2470	1993	1970	2150	1880	1970				24	45
49	14-Aug-01	9	2410	2038	1880	1890	2140	2240				23	45
50	15-Aug-01	10	2420	2045	2350	1890	1850	2090				23	45
51	16-Aug-01	11	2430	1930	2120	1790	1950	1860	0.9240	2.335	5.21E-03	23	45
52	17-Aug-01	12	2480	2070	2200	1960	2150	1970				23	46
55	20-Aug-01	13	2460	1895	1630	1750	1980	2220				23	46
56	21-Aug-01	14	2400	2105	2250	2220	1980	1970				24	44
57	22-Aug-01	15	2440	2100	1850	2250	2150	2150				24	46
58	23-Aug-01	16	2440	2023	2100	1930	2000	2060				24	45
59	24-Aug-01	17	4480 [a]	1995	1900	1990	2010	2080	0.9183	1.985	5.49E-03	24	46
62	27-Aug-01	18	2380	1938	2180	1720	1990	1860				24	45
63	28-Aug-01	19	2370	2045	1950	2100	2050	2080				23	46
64	29-Aug-01	20	2540	2303	2320	2400	2250	2240				23	46
		Mean	**2529**		**2013**				**3.804**	**2.354**	**1.95E-02**	**23.6**	**45.8**
		S.D.	**465**		**181**				**5.804**	**0.723**	**2.68E-02**	**0.6**	**1.0**

[a]Nominal high due to technical problem with the generation system.

Chamber Monitoring Results
Cumulative Exposure Record
Group IIB - 2,000 mg/m^3

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration: Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations: MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment: Mean Temperature (°C)	Mean Humidity (%)
37	2-Aug-01	1	2570	2165	1980	2130	2150	2400				23	47
38	3-Aug-01	2	2330	1935	1770	1970	2000	2000	1.044	1.867	3.26E-03	23	47
41	6-Aug-01	3	2570	1970	2150	1910	1890	1930				23	49
42	7-Aug-01	4	2360	2015	1940	2060	2010	2050				23	49
43	8-Aug-01	5	2310	1978	1930	1970	1960	2050				23	49
44	9-Aug-01	6	2340	2148	2260	2150	2120	2060				23	48
45	10-Aug-01	7	2380	2065	1850	1870	2390	2150	0.8638	1.771	5.82E-02	23	51
48	13-Aug-01	8	2470	2030	1910	1640	2400	2170				23	48
49	14-Aug-01	9	2410	2060	2110	2340	1970	1820				23	48
50	15-Aug-01	10	2420	1915	1670	2060	2080	1850				23	49
51	16-Aug-01	11	2430	1938	1780	1980	2050	1940	0.9601	2.240	5.89E-03	23	48
52	17-Aug-01	12	2480	2218	2080	2350	2290	2150				23	49
55	20-Aug-01	13	2460	2085	2250	2090	2100	1900				23	48
56	21-Aug-01	14	2400	2035	2060	1820	2150	2110				23	46
57	22-Aug-01	15	2440	2138	2120	2190	2090	2150				23	47
58	23-Aug-01	16	2440	1945	1890	1790	2080	2020				23	48
59	24-Aug-01	17	4480 [a]	1973	1970	1960	2000	1960	0.9272	1.840	5.41E-03	23	48
62	27-Aug-01	18	2380	1918	1860	1910	1820	2080				23	46
63	28-Aug-01	19	2370	2075	2300	2090	1970	1940				24	47
64	29-Aug-01	20	2540	2105	2150	2190	2030	2050				24	48
		Mean	2529		2035				0.949	1.930	1.82E-02	23.1	48.0
		S.D.	465		159				0.075	0.211	2.67E-02	0.3	1.2

[a]Nominal high due to technical problem with the generation system.

Chamber Monitoring Results
Cumulative Exposure Record
Group IIIA - 10,000 mg/m^3

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment Mean Temperature (°C)	Humidity (%)
37	2-Aug-01	1	9750	10480	12000	10200	9630	10100				23	49
38	3-Aug-01	2	10000	10830	10000	11600	10900	10800	1.228	2.072	4.53E-03	23	48
41	6-Aug-01	3	9710	10500	10800	10300	10600	10300				23	51
42	7-Aug-01	4	9720	10110	10600	11000	10500	8330				24	50
43	8-Aug-01	5	10300	10380	8410	10700	12000	10400				24	51
44	9-Aug-01	6	9930	9495	7460	9130	11400	9990				24	49
45	10-Aug-01	7	10100	10380	10800	10200	10400	10100	0.8637	1.561	6.13E-02	25	52
48	13-Aug-01	8	10200	10350	11100	10100	10600	9590				24	49
49	14-Aug-01	9	9910	10730	10000	10200	12000	10700				23	48
50	15-Aug-01	10	9410	9935	11300	7530	9910	11000				23	48
51	16-Aug-01	11	9760	10110	10700	8620	10600	10500	1.456	2.932	8.24E-03	23	50
52	17-Aug-01	12	10400	11290	9040	11800	12800	11500				23	51
55	20-Aug-01	13	10200	10630	11700	11900	9450	9450				24	50
56	21-Aug-01	14	9130	9303	8990	10600	9140	8480				24	48
57	22-Aug-01	15	9370	10800	11500	11300	9590	10800				24	49
58	23-Aug-01	16	9630	10650	11000	9990	10900	10700				24	49
59	24-Aug-01	17	9960	11000	11300	10600	11400	10700	0.9396	2.104	4.77E-03	25	49
62	27-Aug-01	18	10200	10850	10300	11000	10900	11200				25	47
63	28-Aug-01	19	9710	9763	9000	11100	10000	8950				24	51
64	29-Aug-01	20	9330	9353	7300	8610	10700	10800				24	49
		Mean	**9836**		**10350**				**1.122**	**2.167**	**1.97E-02**	**23.8**	**49.4**
		S.D.	**349**		**1090**				**0.273**	**0.567**	**2.78E-02**	**0.7**	**1.3**

Chamber Monitoring Results
Cumulative Exposure Record
Group IIIB - 10,000 mg/m^3

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment Mean Temperature (°C)	Humidity (%)
37	2-Aug-01	1	9750	10090	11000	8850	9700	10800				24	43
38	3-Aug-01	2	10000	9630	9550	10200	9630	9140	0.9181	1.528	3.26E-03	24	43
41	6-Aug-01	3	9710	9265	8930	9590	9520	9020				24	45
42	7-Aug-01	4	9720	9240	8970	9810	9550	8630				24	46
43	8-Aug-01	5	10300	9843	10700	8940	8830	10900				24	46
44	9-Aug-01	6	9930	10800	12500	10500	10300	9910				24	45
45	10-Aug-01	7	10100	9865	9550	9450	10800	9660	0.8640	1.582	5.60E-02	24	49
48	13-Aug-01	8	10200	9798	9110	10100	10100	9880				24	45
49	14-Aug-01	9	9910	9865	10200	10300	9480	9480				24	45
50	15-Aug-01	10	9410	9565	9370	9630	9630	9630				24	45
51	16-Aug-01	11	9760	10680	10600	10100	11100	10900	0.9497	2.008	5.76E-03	24	45
52	17-Aug-01	12	10400	11780	11700	11800	12200	11400				24	48
55	20-Aug-01	13	10200	10120	9410	9080	10700	11300				25	45
56	21-Aug-01	14	9130	9758	11200	9630	9150	9050				24	45
57	22-Aug-01	15	9370	9945	11000	10600	9100	9080				24	45
58	23-Aug-01	16	9630	9913	10300	9410	9950	9990				24	47
59	24-Aug-01	17	9960	9838	8820	9730	10300	10500	0.8748	1.664	4.06E-03	24	46
62	27-Aug-01	18	10200	10580	9910	10300	11100	11000				24	44
63	28-Aug-01	19	9710	11400	12000	12000	10200	11400				25	46
64	29-Aug-01	20	9330	10500	11500	10900	10100	9480				24	45
		Mean	**9836**		**10120**				**0.902**	**1.696**	**1.73E-02**	**24.1**	**45.4**
		S.D.	**349**		**910**				**0.040**	**0.216**	**2.58E-02**	**0.3**	**1.4**

Chamber Monitoring Results
Cumulative Exposure Record
Group IVA - 20,000 mg/m³

Day	Date	Exposure Number	Nominal (mg/m³)	Analytical Chamber Concentration: Mean (mg/m³)	Individual (mg/m³)				Particle Size Determinations: MMAD (μm)	GSD	TMC (mg/m³)	Chamber Environment: Mean Temperature (°C)	Mean Humidity (%)
37	2-Aug-01	1	18200	20150	20000	21100	19700	19800				25	48
38	3-Aug-01	2	19300	20630	19900	20600	21300	20700	4.537	2.957	8.77E-03	25	47
41	6-Aug-01	3	17900	19730	19400	20100	19700	19700				25	50
42	7-Aug-01	4	18500	20030	21000	18800	20900	19400				26	49
43	8-Aug-01	5	17900	18900	21100	16400	19000	19100				26	53
44	9-Aug-01	6	19400	20250	20600	21800	20200	18400				26	50
45	10-Aug-01	7	19200	20930	21300	19400	20200	22800	0.8520	1.431	5.01E-02	27	52
48	13-Aug-01	8	18500	19830	21400	18500	19800	19600				26	50
49	14-Aug-01	9	17700	19500	17900	21200	19300	19600				25	48
50	15-Aug-01	10	18000	18150	17200	18300	19500	17600				25	51
51	16-Aug-01	11	18000	19580	16100	19800	21200	21200	0.9696	2.431	5.60E-03	25	51
52	17-Aug-01	12	19100	20430	20100	20600	20700	20300				25	52
55	20-Aug-01	13	18800	20180	19700	20600	20300	20100				25	53
56	21-Aug-01	14	18500	18850	22400	18500	17400	17100				25	49
57	22-Aug-01	15	18500	18530	17100	17800	20100	19100				26	50
58	23-Aug-01	16	20000	20650	21700	19600	20900	20400				25	56
59	24-Aug-01	17	18500	19630	19700	20300	19400	19100	0.9608	2.041	5.93E-03	26	50
62	27-Aug-01	18	19200	19280	18200	19300	20500	19100				26	50
63	28-Aug-01	19	19300	20630	18700	21800	21100	20900				25	52
64	29-Aug-01	20	19600	19980	20900	17200	22000	19800				25	51
		Mean	**18710**		**19790**				**1.830**	**2.215**	**1.76E-02**	**25.5**	**50.6**
		S.D.	**653**		**1382**				**1.806**	**0.643**	**2.17E-02**	**0.6**	**2.1**

Chamber Monitoring Results
Cumulative Exposure Record
Group IVB - 20,000 mg/m^3

Day	Date	Exposure Number	Nominal (mg/m^3)	Analytical Chamber Concentration: Mean (mg/m^3)	Individual (mg/m^3)				Particle Size Determinations: MMAD (μm)	GSD	TMC (mg/m^3)	Chamber Environment: Mean Temperature (°C)	Mean Humidity (%)
37	2-Aug-01	1	18200	19850	21200	19200	19600	19400				25	48
38	3-Aug-01	2	19300	20750	21200	21200	20600	20000	0.9733	1.736	3.11E-03	26	48
41	6-Aug-01	3	17900	20680	20600	20300	20900	20900				26	50
42	7-Aug-01	4	18500	19750	19900	19400	20400	19300				25	50
43	8-Aug-01	5	17900	19830	18300	21400	19700	19900				25	52
44	9-Aug-01	6	19400	20330	19500	20900	20900	20000				25	50
45	10-Aug-01	7	19200	20700	20200	21100	21600	19900	0.8423	1.453	4.13E-02	25	54
48	13-Aug-01	8	18500	19430	18300	20700	19100	19600				25	52
49	14-Aug-01	9	17700	19380	19400	18700	19900	19500				26	47
50	15-Aug-01	10	18000	20280	19800	19900	20300	21100				25	50
51	16-Aug-01	11	18000	19250	19800	18600	19800	18800	0.9267	1.785	4.15E-03	25	50
52	17-Aug-01	12	19100	19900	19500	20100	20100	19900				25	50
55	20-Aug-01	13	18800	20030	19700	19400	20500	20500				26	51
56	21-Aug-01	14	18500	21230	20400	21300	21900	21300				25	49
57	22-Aug-01	15	18500	20250	21600	19400	20700	19300				25	49
58	23-Aug-01	16	20000	20000	17600	21100	21400	19900				24	50
59	24-Aug-01	17	18500	20050	19400	20800	20200	19800	0.8972	1.956	5.41E-03	25	51
62	27-Aug-01	18	19200	19730	19800	20000	18400	20700				25	50
63	28-Aug-01	19	19300	19950	20200	20500	19600	19500				26	50
64	29-Aug-01	20	19600	20600	18100	22100	21600	20600				26	51
		Mean	**18710**		**20100**				**0.910**	**1.733**	**1.35E-02**	**25.3**	**50.1**
		S.D.	**653**		**923**				**0.055**	**0.209**	**1.86E-02**	**0.6**	**1.6**

TABLE B

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

MALES — SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY -1	TOTAL
# OF ANIMALS EXAMINED	1	5	
	2	5	
	3	5	
	4	5	
	5	5	
NORMAL			
WITHIN NORMAL LIMITS	1	5	5
	2	5	5
	3	5	5
	4	5	5
	5	5	5

TABLE B

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

FEMALES — SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY -1	TOTAL
# OF ANIMALS EXAMINED	1	5	
	2	5	
	3	5	
	4	5	
	5	5	
NORMAL			
WITHIN NORMAL LIMITS	1	5	5
	2	5	5
	3	5	5
	4	5	5
	5	5	5

TABLE C

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

MALES — MEAN BODY WEIGHTS (GRAMS)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK -1	MEAN	156	162	158	157	159
	S.D.	6.9	6.5	7.8	7.5	5.8
	N	5	5	5	5	5
WEEK 0	MEAN	224	224	221	220	225
	S.D.	6.9	7.0	10.4	12.7	9.0
	N	5	5	5	5	5
WEEK 1	MEAN	286	284	278	278	291
	S.D.	9.4	13.1	14.8	17.6	10.4
	N	5	5	5	5	5
WEEK 2	MEAN	334	333	318	318	339
	S.D.	15.4	22.5	22.1	20.4	14.2
	N	5	5	5	5	5
WEEK 3	MEAN	372	374	358	354	379
	S.D.	17.2	27.3	28.0	19.9	20.3
	N	5	5	5	5	5
WEEK 4	MEAN	408	411	390	383	413
	S.D.	25.2	33.9	31.7	20.3	21.9
	N	5	5	5	5	5

No statistically significant differences

TABLE C

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

FEMALES — MEAN BODY WEIGHTS (GRAMS)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK -1	MEAN	141	145	143	143	145
	S.D.	4.5	6.2	6.6	6.2	4.5
	N	5	5	5	5	5
WEEK 0	MEAN	173	173	173	174	173
	S.D.	5.7	6.8	9.0	9.6	8.4
	N	5	5	5	5	5
WEEK 1	MEAN	198	203	197	204	206
	S.D.	5.4	10.4	6.3	10.6	10.7
	N	5	5	5	5	5
WEEK 2	MEAN	218	225	218	221	226
	S.D.	9.2	5.1	15.8	12.1	9.3
	N	5	5	5	5	5
WEEK 3	MEAN	235	236	234	239	237
	S.D.	9.1	2.8	7.8	15.4	10.9
	N	5	5	5	5	5
WEEK 4	MEAN	253	252	244	252	248
	S.D.	11.6	5.6	9.4	10.3	12.4
	N	5	5	5	5	5

No statistically significant differences

TABLE D

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

MALES — MEAN BODY WEIGHT CHANGE (GRAMS)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK 0 TO 1	MEAN	62	61	58	58	67
	S.D.	3.0	6.9	7.7	6.5	2.1
	N	5	5	5	5	5
WEEK 0 TO 2	MEAN	110	109	97	99	115
	S.D.	9.8	17.2	15.3	9.0	7.7
	N	5	5	5	5	5
WEEK 0 TO 3	MEAN	148	150	137	134	154
	S.D.	12.5	22.1	20.5	11.7	13.5
	N	5	5	5	5	5
WEEK 0 TO 4	MEAN	184	187	169	164	188
	S.D.	20.4	28.4	24.5	11.9	15.9
	N	5	5	5	5	5

No statistically significant differences

TABLE D

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

FEMALES — MEAN BODY WEIGHT CHANGE (GRAMS)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK 0 TO 1	MEAN	25	29	24	30	33
	S.D.	2.4	7.5	4.6	2.7	6.4
	N	5	5	5	5	5
WEEK 0 TO 2	MEAN	46	52	45	47	53
	S.D.	4.3	2.9	13.7	6.3	8.4
	N	5	5	5	5	5
WEEK 0 TO 3	MEAN	63	63	60	65	64
	S.D.	7.5	7.2	4.8	7.5	7.3
	N	5	5	5	5	5
WEEK 0 TO 4	MEAN	81	79	71	78	76
	S.D.	6.9	6.0	9.6	2.6	11.3
	N	5	5	5	5	5

No statistically significant differences

TABLE E

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

MALES — MEAN FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK 0	MEAN	130	131	126	129	127
	S.D.	6.2	2.6	4.4	6.5	9.2
	N	5	5	5	5	5
WEEK 1	MEAN	104	106	102	102	108
	S.D.	4.1	2.5	2.4	5.2	4.4
	N	5	5	5	5	5
WEEK 2	MEAN	89	89	83	84	92
	S.D.	4.2	2.6	3.3	5.1	4.7
	N	5	5	5	5	3
WEEK 3	MEAN	78	80	77	77	81
	S.D.	1.9	2.1	3.8	2.1	3.6
	N	5	5	5	5	5
WEEK 4	MEAN	72	75	71	70	75
	S.D.	4.5	4.7	2.8	2.7	2.7
	N	5	5	5	5	5

No statistically significant differences

TABLE E

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

FEMALES — MEAN FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

DOSE GROUP:		I	II	III	IV	V
EXPOSURE LEVEL (mg/m3):		0	2,000	10,000	20,000	SCE+CONTROL
WEEK 0	MEAN	110	111	115	117	113
	S.D.	7.5	6.9	7.2	9.4	4.7
	N	5	5	5	5	5
WEEK 1	MEAN	91	100*	95	96	100*
	S.D.	2.1	6.0	2.9	5.8	3.8
	N	5	5	5	5	5
WEEK 2	MEAN	87	93	88	86	92
	S.D.	5.2	3.5	7.4	3.7	5.1
	N	5	4	5	5	4
WEEK 3	MEAN	83	90	88	84	87
	S.D.	4.9	4.8	10.5	3.6	5.7
	N	5	5	5	5	5
WEEK 4	MEAN	79	83	85	81	79
	S.D.	1.6	2.3	12.5	3.7	7.2
	N	5	5	5	5	5

Statistical key: * = $p<0.05$

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP I 0 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY	- 1
1031	WITHIN NORMAL LIMITS		P
1032	WITHIN NORMAL LIMITS		P
1033	WITHIN NORMAL LIMITS		P
1034	WITHIN NORMAL LIMITS		P
1035	WITHIN NORMAL LIMITS		P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP II 2,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY	- 1
2021	WITHIN NORMAL LIMITS		P
2022	WITHIN NORMAL LIMITS		P
2023	WITHIN NORMAL LIMITS		P
2024	WITHIN NORMAL LIMITS		P
2025	WITHIN NORMAL LIMITS		P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP III 10,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY	- 1
3021	WITHIN NORMAL LIMITS		P
3022	WITHIN NORMAL LIMITS		P
3023	WITHIN NORMAL LIMITS		P
3024	WITHIN NORMAL LIMITS		P
3025	WITHIN NORMAL LIMITS		P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP IV 20,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY	- 1
4031	WITHIN NORMAL LIMITS		P
4032	WITHIN NORMAL LIMITS		P
4033	WITHIN NORMAL LIMITS		P
4034	WITHIN NORMAL LIMITS		P
4035	WITHIN NORMAL LIMITS		P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP V SCE+CONTROL

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 1
5031	WITHIN NORMAL LIMITS	P
5032	WITHIN NORMAL LIMITS	P
5033	WITHIN NORMAL LIMITS	P
5034	WITHIN NORMAL LIMITS	P
5035	WITHIN NORMAL LIMITS	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP I 0 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 1
1541	WITHIN NORMAL LIMITS	P
1542	WITHIN NORMAL LIMITS	P
1543	WITHIN NORMAL LIMITS	P
1544	WITHIN NORMAL LIMITS	P
1545	WITHIN NORMAL LIMITS	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP II 2,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 1
2531	WITHIN NORMAL LIMITS	P
2532	WITHIN NORMAL LIMITS	P
2533	WITHIN NORMAL LIMITS	P
2534	WITHIN NORMAL LIMITS	P
2535	WITHIN NORMAL LIMITS	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP III 10,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY	- 1
3531	WITHIN NORMAL LIMITS		P
3532	WITHIN NORMAL LIMITS		P
3533	WITHIN NORMAL LIMITS		P
3534	WITHIN NORMAL LIMITS		P
3535	WITHIN NORMAL LIMITS		P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP IV 20,000 mg/m3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 1
4541	WITHIN NORMAL LIMITS	P
4542	WITHIN NORMAL LIMITS	P
4543	WITHIN NORMAL LIMITS	P
4544	WITHIN NORMAL LIMITS	P
4545	WITHIN NORMAL LIMITS	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE F

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP V SCE+CONTROL

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 1
5541	WITHIN NORMAL LIMITS	P
5542	WITHIN NORMAL LIMITS	P
5543	WITHIN NORMAL LIMITS	P
5544	WITHIN NORMAL LIMITS	P
5545	WITHIN NORMAL LIMITS	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP I 0 mg/m3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
1031	152	214	272	314	351	383
1032	161	231	298	356	397	447
1033	166	228	289	337	369	410
1034	152	224	287	326	365	388
1035	150	221	282	334	378	413
MEAN	156	224	286	334	372	408
S.D.	6.9	6.9	9.4	15.4	17.2	25.2
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
2021	153	215	267	311	350	375
2022	159	223	290	350	395	439
2023	162	219	274	306	340	375
2024	169	233	297	352	400	445
2025	167	229	294	346	383	419
MEAN	162	224	284	333	374	411
S.D.	6.5	7.0	13.1	22.5	27.3	33.9
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
3021	166	232	289	335	385	421
3022	159	221	291	340	383	421
3023	160	222	274	306	341	371
3024	145	204	255	286	319	348
3025	160	225	283	322	361	389
MEAN	158	221	278	318	358	390
S.D.	7.8	10.4	14.8	22.1	28.0	31.7
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
4031	160	218	267	305	331	361
4032	159	226	291	329	367	400
4033	164	233	297	342	372	404
4034	144	199	254	291	333	363
4035	157	223	280	326	364	389
MEAN	157	220	278	318	354	383
S.D.	7.5	12.7	17.6	20.4	19.9	20.3
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
5031	164	225	291	333	366	395
5032	163	231	300	351	394	433
5033	160	236	303	358	407	439
5034	150	213	279	331	369	405
5035	158	219	283	324	360	393
MEAN	159	225	291	339	379	413
S.D.	5.8	9.0	10.4	14.2	20.3	21.9
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP I 0 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
1541	143	164	191	203	220	234
1542	134	172	200	222	241	257
1543	142	172	193	219	241	253
1544	142	180	205	228	233	260
1545	146	175	199	218	241	263
MEAN	141	173	198	218	235	253
S.D.	4.5	5.7	5.4	9.2	9.1	11.6
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
2531	140	171	205	224	241	257
2532	148	172	208	227	236	246
2533	151	179	198	226	234	252
2534	151	181	216	232	238	258
2535	138	164	188	218	235	248
MEAN	145	173	203	225	236	252
S.D.	6.2	6.8	10.4	5.1	2.8	5.6
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
3531	140	162	190	210	221	230
3532	148	179	198	222	239	247
3533	152	185	205	226	238	243
3534	136	172	201	237	239	255
3535	139	169	191	196	230	247
MEAN	143	173	197	218	234	244
S.D.	6.6	9.0	6.3	15.8	7.8	9.4
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
4541	144	169	196	215	230	247
4542	150	188	220	233	257	266
4543	135	163	193	204	218	238
4544	148	179	206	225	245	254
4545	139	173	206	230	247	254
MEAN	143	174	204	221	239	252
S.D.	6.2	9.6	10.6	12.1	15.4	10.3
N	5	5	5	5	5	5

TABLE G

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY -1	0	1	2	3	4
5541	147	176	220	237	245	269
5542	140	169	201	231	243	246
5543	140	162	194	214	220	237
5544	146	173	202	219	232	241
5545	150	185	214	229	244	249
MEAN	145	173	206	226	237	248
S.D.	4.5	8.4	10.7	9.3	10.9	12.4
N	5	5	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

MALES GROUP I 0 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
1031	59	101	137	169
1032	67	125	166	215
1033	60	108	141	181
1034	63	102	141	164
1035	61	113	157	192
MEAN	62	110	148	184
S.D.	3.0	9.8	12.5	20.4
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

MALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
2021	52	96	135	161
2022	68	128	173	217
2023	55	87	120	156
2024	64	119	167	213
2025	66	117	155	191
MEAN	61	109	150	187
S.D.	6.9	17.2	22.1	28.4
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

MALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
3021	57	103	153	189
3022	70	120	162	200
3023	51	84	119	149
3024	51	83	115	144
3025	58	97	136	164
MEAN	58	97	137	169
S.D.	7.7	15.3	20.5	24.5
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

MALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
4031	50	88	114	144
4032	65	102	141	174
4033	64	109	140	171
4034	55	91	133	163
4035	57	103	142	166
MEAN	58	99	134	164
S.D.	6.5	9.0	11.7	11.9
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

MALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
5031	66	108	141	170
5032	69	120	163	202
5033	68	122	172	204
5034	67	118	156	192
5035	64	105	141	173
MEAN	67	115	154	188
S.D.	2.1	7.7	13.5	15.9
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

FEMALES GROUP I 0 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
1541	27	39	56	70
1542	27	50	69	84
1543	22	47	70	82
1544	25	49	53	80
1545	24	43	66	88
MEAN	25	46	63	81
S.D.	2.4	4.3	7.5	6.9
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

FEMALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
2531	34	54	70	87
2532	36	55	64	74
2533	19	48	55	74
2534	34	51	56	77
2535	24	54	70	84
MEAN	29	52	63	79
S.D.	7.5	2.9	7.2	6.0
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

FEMALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
3531	28	49	60	68
3532	19	43	60	68
3533	20	41	54	59
3534	29	65	67	83
3535	22	27	62	78
MEAN	24	45	60	71
S.D.	4.6	13.7	4.8	9.6
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

FEMALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
4541	27	46	61	78
4542	32	45	69	78
4543	30	41	56	75
4544	27	46	66	75
4545	33	58	75	81
MEAN	30	47	65	78
S.D.	2.7	6.3	7.5	2.6
N	5	5	5	5

TABLE H

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL BODY WEIGHT CHANGE (GRAMS)

FEMALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY 0-1	0-2	0-3	0-4
5541	45	61	70	94
5542	32	62	74	77
5543	32	52	58	75
5544	29	46	59	68
5545	30	44	60	64
MEAN	33	53	64	76
S.D.	6.4	8.4	7.3	11.3
N	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

MALES GROUP I 0 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
1031	126	103	88	78	72
1032	126	100	84	76	71
1033	129	107	94	81	80
1034	141	109	93	79	70
1035	129	100	86	77	68
MEAN	130	104	89	78	72
S.D.	6.2	4.1	4.2	1.9	4.5
N	5	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

MALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
2021	129	102	87	79	73
2022	130	108	92	82	79
2023	130	108	90	80	78
2024	133	106	91	83	79
2025	135	105	86	78	68
MEAN	131	106	89	80	75
S.D.	2.6	2.5	2.6	2.1	4.7
N	5	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

MALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
3021	130	103	86	81	76
3022	129	106	87	81	72
3023	119	99	82	74	69
3024	127	103	79	73	69
3025	124	102	82	76	70
MEAN	126	102	83	77	71
S.D.	4.4	2.4	3.3	3.8	2.8
N	5	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

MALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
4031	121	98	82	77	73
4032	127	96	77	73	67
4033	139	110	91	78	70
4034	129	103	84	78	68
4035	130	101	84	77	72
MEAN	129	102	84	77	70
S.D.	6.5	5.2	5.1	2.1	2.7
N	5	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

MALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
5031	117	107	SF	82	74
5032	124	103	88	77	72
5033	131	107	SF	85	76
5034	140	115	97	85	78
5035	122	108	90	79	72
MEAN	127	108	92	81	75
S.D.	9.2	4.4	4.7	3.6	2.7
N	5	5	3	5	5

SF=Spilled Feeder

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP I 0 mg/m3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
1541	98	89	80	83	77
1542	118	92	88	80	78
1543	111	94	92	88	77
1544	113	90	83	77	81
1545	108	92	91	87	80
MEAN	110	91	87	83	79
S.D.	7.5	2.1	5.2	4.9	1.6
N	5	5	5	5	5

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP II 2,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
2531	118	98	94	90	84
2532	118	105	SF	95	83
2533	110	103	92	83	79
2534	103	91	88	88	85
2535	106	104	96	93	83
MEAN	111	100	93	90	83
S.D.	6.9	6.0	3.5	4.8	2.3
N	5	5	4	5	5

SF=Spilled Feeder

TABLE I

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
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AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP III 10,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
3531	108	95	80	101	103
3532	111	99	90	85	79
3533	112	91	82	75	71
3534	125	97	99	83	79
3535	121	94	91	96	91
MEAN	115	95	88	88	85
S.D.	7.2	2.9	7.4	10.5	12.5
N	5	5	5	5	5

TABLE I

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INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP IV 20,000 mg/m3

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
4541	103	88	84	81	79
4542	122	99	87	85	75
4543	111	93	82	79	82
4544	121	96	90	87	83
4545	126	103	89	86	85
MEAN	117	96	86	84	81
S.D.	9.4	5.8	3.7	3.6	3.7
N	5	5	5	5	5

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INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP V SCE+CONTROL

ANIMAL#	WEEK OF STUDY 0	1	2	3	4
5541	118	103	89	97	86
5542	116	102	95	85	73
5543	113	102	96	88	88
5544	114	95	85	83	76
5545	106	96	SF	85	73
MEAN	113	100	92	87	79
S.D.	4.7	3.8	5.1	5.7	7.2
N	5	5	4	5	5

SF=Spilled Feeder

TABLE J

GASOLINE TAME VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY
INHALATION TOXICITY STUDY IN RATS WITH NEUROTOXICITY ASSESSMENTS
AND 4-WEEK IN VIVO GENOTOXICITY AND IMMUNOTOXICITY ASSESSMENTS

ANIMAL TERMINATION HISTORY

MALES GROUP I 0 mg/m3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
1031	TERMINAL SACRIFICE	30-AUG-01	4	28
1032	TERMINAL SACRIFICE	30-AUG-01	4	28
1033	TERMINAL SACRIFICE	30-AUG-01	4	28
1034	TERMINAL SACRIFICE	30-AUG-01	4	28
1035	TERMINAL SACRIFICE	30-AUG-01	4	28

TABLE J

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ANIMAL TERMINATION HISTORY

MALES GROUP II 2,000 mg/m3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
2021	TERMINAL SACRIFICE	30-AUG-01	4	28
2022	TERMINAL SACRIFICE	30-AUG-01	4	28
2023	TERMINAL SACRIFICE	30-AUG-01	4	28
2024	TERMINAL SACRIFICE	30-AUG-01	4	28
2025	TERMINAL SACRIFICE	30-AUG-01	4	28

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ANIMAL TERMINATION HISTORY

MALES GROUP III 10,000 mg/m3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
3021	TERMINAL SACRIFICE	30-AUG-01	4	28
3022	TERMINAL SACRIFICE	30-AUG-01	4	28
3023	TERMINAL SACRIFICE	30-AUG-01	4	28
3024	TERMINAL SACRIFICE	30-AUG-01	4	28
3025	TERMINAL SACRIFICE	30-AUG-01	4	28

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4031	TERMINAL SACRIFICE	30-AUG-01	4	28
4032	TERMINAL SACRIFICE	30-AUG-01	4	28
4033	TERMINAL SACRIFICE	30-AUG-01	4	28
4034	TERMINAL SACRIFICE	30-AUG-01	4	28
4035	TERMINAL SACRIFICE	30-AUG-01	4	28

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ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
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5032	TERMINAL SACRIFICE	30-AUG-01	4	28
5033	TERMINAL SACRIFICE	30-AUG-01	4	28
5034	TERMINAL SACRIFICE	30-AUG-01	4	28
5035	TERMINAL SACRIFICE	30-AUG-01	4	28

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FEMALES GROUP I 0 mg/m3

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1541	TERMINAL SACRIFICE	30-AUG-01	4	28
1542	TERMINAL SACRIFICE	30-AUG-01	4	28
1543	TERMINAL SACRIFICE	30-AUG-01	4	28
1544	TERMINAL SACRIFICE	30-AUG-01	4	28
1545	TERMINAL SACRIFICE	30-AUG-01	4	28

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ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
2531	TERMINAL SACRIFICE	30-AUG-01	4	28
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2533	TERMINAL SACRIFICE	30-AUG-01	4	28
2534	TERMINAL SACRIFICE	30-AUG-01	4	28
2535	TERMINAL SACRIFICE	30-AUG-01	4	28

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ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
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3532	TERMINAL SACRIFICE	30-AUG-01	4	28
3533	TERMINAL SACRIFICE	30-AUG-01	4	28
3534	TERMINAL SACRIFICE	30-AUG-01	4	28
3535	TERMINAL SACRIFICE	30-AUG-01	4	28

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4543	TERMINAL SACRIFICE	30-AUG-01	4	28
4544	TERMINAL SACRIFICE	30-AUG-01	4	28
4545	TERMINAL SACRIFICE	30-AUG-01	4	28

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FEMALES GROUP V SCE+CONTROL

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
5541	TERMINAL SACRIFICE	30-AUG-01	4	28
5542	TERMINAL SACRIFICE	30-AUG-01	4	28
5543	TERMINAL SACRIFICE	30-AUG-01	4	28
5544	TERMINAL SACRIFICE	30-AUG-01	4	28
5545	TERMINAL SACRIFICE	30-AUG-01	4	28

FINAL REPORT

Immunological Evaluation of Gasoline TAME Vapor Condensate in Female Sprague Dawley Rats Using the Plaque Forming Cell Assay

Test Substance:	Gasoline TAME Vapor Condensate
Protocol No:	HLS 00-6128
Subcontractor's Sponsor:	Huntingdon Life Sciences Mettlers Road East Millstone, NJ 08875 (732) 873-2550 *Phone* (732) 873-3992 *Fax*
Contractor's Study Director:	Gary M. Hoffman, B.A., DABT
Sponsor:	American Petroleum Institute 1200 L Street, NW Washington, DC 20005
Sponsor's Representative:	Thomas Gray, M.S., DABT
Project Number:	ITI 801
Date:	28 April 2011
Principal Investigator:	Kimber L. White, Jr., Ph.D.
Studies Conducted at:	

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