Study Title

SATELLITE PROCEDURE
GASOLINE ETBE VAPOR CONDENSATE
RAT MICRONUCLEUS TEST
AMENDED FINAL REPORT

TEST GUIDELINES: US EPA Micronucleus Assay 79.64, CFR Vol. 59, No. 122, 27 June 1994.

US EPA (1998) Health Effects Test Guidelines; OPPTS 870.5395 Mammalian Erythrocyte Micronucleus Test.

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STUDY COMPLETED ON: 3 September 2010

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HUNTINGDON LIFE SCIENCES LTD (PRC) STUDY NO.: 00-6129

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APPENDICES

COMPLIANCE WITH GOOD LABORATORY PRACTICE STANDARDS

The slide evaluation phase of the study described in this report was conducted in compliance with the following Good Laboratory Practice standards and I consider the data generated to be valid.

The UK Good Laboratory Practice Regulations (Statutory Instrument 1999 No. 3106, as amended by Statutory Instrument 2004 No. 994).

OECD Principles of Good Laboratory Practice (as revised in 1997), ENV/MC/CHEM(98)17.

EC Commission Directive 1999/11/EC of 8 March 1999 (Official Journal No L 77/8), as amended by EC Commission Directive 2004/10/EC of 11 February 2004 (Official Journal No L 50/44).

US EPA 79.60, CFR Vol. 59, No. 122, 27 June 1994.

No compliance is claimed for work presented in the Experimental Procedure – In-life phase or Appendix 2 of this report.

The study was first reported on 3 September 2010. Amendment was required as an incorrect ERC - Quality Assurance Statement report audit date was issued within the PRC final report. The Quality Assurance Statement (page 5) has therefore been amended and the report re-issued.

Lincoln Pritchard BSc (Hons.)
Principal Investigator,
Huntingdon Life Sciences Ltd.

20 October 2010
Date

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I am claiming compliance for the whole study 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.

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

22Oct10
Date

ERC - QUALITY ASSURANCE STATEMENT

The following inspection and audit have been carried out in relation to the slide evaluation phase of this study:

Study Phase	Date of Inspection	Date of Reporting to Principal Investigator and Test Site Management	Date of Reporting to Study Director, Test Facility Management and Lead QA
Process Based Inspection			
Slide scoring	5 March 2002	5 March 2002	-
Report Audit	29 April 2002 11 April 2003 14-15 October 2004	29 April 2002 11 April 2003 15 October 2004	30 April 2002 11 April 2003 15 October 2004
Amended Report Audit	20 October 2010	20 October 2010	20 October 2010

Process Based Inspection: At or about the time this phase of the study was in progress, inspections of routine and repetitive procedures employed on this type of study were carried out. The slide scoring inspection was conducted and reported to appropriate Company Management as indicated above.

Report Audit: This appendix has been audited by the Quality Assurance Department. This audit was conducted and reported to the Principal Investigator and Company Management as indicated above.

Study based inspections were not performed on this phase of the study.

The methods, procedures and observations were found to be accurately described and the reported results of this appendix to reflect the raw data.

C Sharman

Colin Sharman MRQA
Lead Auditor
Department of Quality Assurance
Huntingdon Life Sciences Ltd

20 October 2010

Date

PRC - 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
GLP Protocol Review	24, 29 Aug 01	29 Aug 01
Exposure (Charcoal Tube Sampling)	14 Dec 01	14 Dec 01
Positive Dose Control Preparation and Dose Administration	19 Dec 01	20 Dec 01
Genotoxicity Necropsy	20 Dec 01	20 Dec 01
Micronucleus Report	12-13 Jun 02	18 Jun 02

Fran Jannone

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

20 Oct 10

Date

RESPONSIBLE PERSONNEL AND SCIENTIFIC APPROVAL

Gary M. Hoffman, B.A., D.A.B.T.,
Study Director
Department of Safety Assessment, PRC.

22 Oct 10
Date

Lincoln Pritchard BSc (Hons.)
Principal Investigator
Department of Genetic Toxicology, ERC

26 October 2010.
Date

SUMMARY

This satellite micronucleus study was designed to assess the potential induction of micronuclei by Gasoline ETBE Vapor Condensate in bone marrow cells of the rat. Animals were exposed for four weeks (5 days per week) by inhalation administration of the test substance at exposure levels of 2000, 10000 and 20000 mg/m^3.

The test substance and negative control were administered by inhalation. The negative control group received clean air. A positive control group was dosed on one occasion by intraperitoneal injection, with cyclophosphamide at 40 mg/kg bodyweight.

Bone marrow smears were obtained from five male and five female animals in the negative control and each of the test substance groups 24 hours after the 20^{th} exposure and from the positive control group 24 hours after dosing. One smear from each animal was examined for the presence of micronuclei in 2000 immature erythrocytes. The proportion of immature erythrocytes was assessed by examination of at least 1000 erythrocytes from each animal. A record of the incidence of micronucleated mature erythrocytes was also kept.

Following an equivocal result obtained from the first set of slides, an additional set of slides were stained and scored to ascertain if the result from the first set was reproducible.

No substantial decrease in the proportion of immature erythrocytes were observed in rats treated with Gasoline ETBE Vapor Condensate compared to negative control values throughout the test.

In slide set 2, although there was an apparent increase in the group mean mie with increasing concentration, none of the values from animals exposed to Gasoline ETBE Vapour condensate were statistically significant compared to the negative control value. The statistical significance seen in slide set 1 data was not reproduced in slide set 2.

The increases in the incidence of micronucleated immature erythrocytes (mie) reported in Slide set 1 and for data from the combined Slide set 1 and 2 were not considered to be of biological significance for the following reasons.

- The mean individual value for treated animals was within the historical control range throughout.
- The statistically significant increase observed in female animals (Slide set 1) was not dose related and was not reproduced in Slide set 2.
- The trend test for combined sexes was significant for Slide set 1 but was not significant for Slide set 2.

The positive control compound, Cyclophosphamide, produced large, highly significant increases in the frequency of micronucleated immature erythrocytes and a decrease in the proportion of immature erythrocytes ($P<0.001$ or $P<0.01$).

It is concluded that Gasoline ETBE Vapor Condensate did not show conclusive evidence of an increase in the frequency of micronuclei in immature erythrocytes, and did not show any evidence that it caused bone marrow cell toxicity when administered by inhalation exposure in this *in vivo* test procedure.

INTRODUCTION

The purpose of this satellite micronucleus study was to assess the potential of Gasoline ETBE Vapor Condensate to induce mutagenic effects in rats following inhalation administration using an *in vivo* cytogenetic system (Boller and Schmid 1970, MacGregor *et al* 1987, Mavournin *et al* 1990). The inhalation route was selected for use in this test as the most likely route of human exposure.

The procedures used were based on the recommendations of the following guidelines:

- US EPA Micronucleus Assay 79.64, CFR Vol. 59, No. 122, 27 June 1994.
- US EPA (1998) Health Effects Test Guidelines; OPPTS 870.5395 Mammalian Erythrocyte Micronucleus Test.

The bone marrow micronucleus test, originally developed by Matter and Schmid (1971), is a widely employed and internationally accepted short-term assay for identification of genotoxic effects (chromosome damage and aneuploidy) associated with mutagens and carcinogens (Mavournin *et al* 1990). This *in vivo* system allows consideration of various factors including pharmacokinetics, metabolism and DNA repair which cannot be accurately modelled in an *in vitro* system. Young adult rats are chosen for use because of the high rate of cell division in the bone marrow, because of the wealth of background data on this species, and because of their general suitability for toxicological investigations.

In mitotic cells in which chromosomal breakage has been caused by the test substance or its metabolites, acentric fragments of the chromosomes do not separate at the anaphase stage of cell division. After telophase these fragments may not be included in the nuclei of the daughter cells and hence will form single or multiple micronuclei (Howell-Jolly bodies) in the cytoplasm of these cells. Micronuclei are seen in a wide variety of cells, but erythrocytes are chosen for examination since micronuclei are not obscured by the main nucleus and are therefore easily detected in this cell type (Boller and Schmid 1970).

Micronucleated immature erythrocytes appear in the bone marrow approximately 24 hours after induction of chromosome damage. These immature erythrocytes can be differentiated by a variety of staining techniques which rely on their relatively high content of residual RNA. Using the Feulgen method, they stain blue while mature erythrocytes (which contain little RNA) are counterstained orange. An increased incidence of micronucleated immature erythrocytes is indicative of recent exposure to a chromosome-damaging agent. A simultaneous marked increase in the incidence of micronucleated mature erythrocytes is not expected and may be indicative of micronucleus-like artifacts (Schmid 1976).

Substances which interfere with the mitotic spindle apparatus will cause non-disjunction (unequal separation of the chromosomes at anaphase resulting in aneuploidy) or lagging chromosomes at anaphase which may not be incorporated into the daughter nuclei. These lagging chromosomes are not excluded from the erythroblast with the main nucleus and hence also give rise to micronuclei.

Any toxic effects of the test substance on the nucleated cells may lead either to a reduction in cell division or to cell death. These effects in turn lead to a reduction in the number of nucleated cells and immature erythrocytes; to compensate for this, peripheral blood is shunted into the bone marrow (von Ledebur and Schmid 1973). If the proportion of immature erythrocytes is found to be significantly less than the control value, this is taken as being indicative of toxicity. A very large decrease in the proportion would be indicative of a cytostatic or cytotoxic effect.

The slide evaluation phase of the satellite micronucleus study was performed at the Department of Genetic Toxicology, Huntingdon Life Sciences (ERC), Eye, Suffolk, IP23 7PX, England.

The experimental start and completion dates of the slide evaluation phase of the study were 23 January 2002 and 17 February 2003 respectively.

EXPERIMENTAL PROCEDURE

In-life phase

The in-life phase of the study was carried out at the Princeton Research Center starting on 23 November 2001 and was completed on 20 December 2001.

All animals in the negative control and test substance groups were exposed for four weeks (5 days per week) by inhalation. The non-exposed positive control group was dosed with Cyclophosphamide administered on one occasion by intraperitoneal injection at a volume dosage of 10 ml/kg bodyweight. Cyclophosphamide (CP, CAS # 6055-19-2, lot number 108H0568, received 28 August 2001, expiration 30 June 2002, white powder, storage 2-8ºC, purity 99.2%), was obtained from the Sigma Chemical Company (responsible for its characterization), and was dissolved and diluted in sterile distilled water at Huntingdon Life Sciences to stock concentrations of 4.0 mg/mL for use as the positive control for the micronucleus study.

The experimental design is shown below:

Group	Treatment	Exposure Level ($mg/m^{3)}$	Animal Numbers	
			Male	Female
1	Air control	-	1081 - 1085	1591 – 1595
2	Test Substance	2000	2071 - 2075	2581 – 2585
3	Test Substance	10000	3071 - 3075	3581 – 3585
4	Test Substance	20000	4081 – 4085	4591 – 4595
6	Cyclophosphamide	40 (mg/kg)	6051 – 6055	6561 - 6565

Five males and five females from the negative control and each of the test substance groups were sacrificed 24 hours after the final exposure period by isoflurane inhalation/exsanguination. Five males and five females from the positive control group were sacrificed 24 hours after CP dosing by CO_2 inhalation/exsanguination. Both femurs were exposed, cut just above the knee and the bone marrow was aspirated into a syringe containing a small volume (about 0.5 mL) of serum. The cells were then flushed into a centrifuge tube of cold serum. The tubes were identified by labels containing the study, group number, and animal number.

The bone marrow cells were pelleted by centrifugation at about 150 x g for about 5 min and the supernatant drawn off, leaving a small amount of serum with the cell pellet. The cells were resuspended by aspiration with a pasteur pipette and a small drop of cells was spread onto a clean glass slide. Four slides were prepared from each animal.

The slides were allowed to air dry, fixed by dipping for about 3 to 10 minutes in methanol, and aged overnight or longer prior to staining. Slides were labelled with experiment and animal number using a lead pencil.

Two slides from each animal were despatched to Huntingdon Life Sciences (ERC), Eye, Suffolk, IP23 7PX, England for slide staining and analysis. The remaining 2 smears and the cell pellet (refrigerated) were held in reserve at PRC in case of technical problems with the first 2 smears.

Slide evaluation

Due to the presence of mast cell granules in rat bone smears, which appear identical to micronuclei when stained using the Romanowsky methods, a modified Feulgen staining method is employed for the rat micronucleus test in this laboratory. This method specifically stains DNA-containing bodies deep purple while leaving mast cell granules unstained. The method also allows reasonable differentiation of mature and immature erythrocytes and produces permanent preparations.

One slide from each animal was stained as follows, the remaining slide was held in reserve:

1. Hydrolysed in Bouin's fluid at room temperature for approximately 30 hours.
2. Washed three times in purified water (5 minutes per wash).
3. Stained in Schiff's reagent for one hour at room temperature.
4. Washed three times in purified water (5 minutes per wash).
5. Counter-stained for ten minutes in very dilute (approximately 0.06 g/l) aqueous Eosin yellowish.
6. Washed for five minutes in purified water.
7. Stained for 30 minutes in Mayer's Haemalum diluted 9 volumes: 1 volume with aqueous acridine orange solution in purified water (1 mg/ml).
8. Rinsed in purified water.
9. Rinsed in running tap water.
10. Washed for 5 minutes in purified water.
11. Air-dried.
12. Slides were mounted with coverslips using DPX mountant.
13. The mountant was allowed to harden at approximately 37°C.

NB All stains and Bouin's fluid were filtered immediately prior to use to remove particulate material.

The stained smears were examined (under code) by light microscopy to determine the incidence of micronucleated cells per 2000 polychromatic erythrocytes per animal. One smear per animal was examined. The remaining smears were held temporarily in reserve in case of technical problems with the first smear.

Micronuclei are identified by the following criteria:

- Large enough to discern morphological characteristics
- Should possess a generally rounded shape with a clearly defined outline
- Should be deeply stained and similar in colour to the nuclei of other cells - not black
- Should lie in the same focal plane as the cell
- Lack internal structure, *ie* they are pyknotic
- There should be no micronucleus-like debris in the area surrounding the cell

The proportion of immature erythrocytes for each animal was assessed by examination of at least 1000 erythrocytes. A record of the number of micronucleated mature erythrocytes observed during assessment of this proportion was also kept as recommended by Schmid (1976).

Following the results of the slide reading from the first set of slides, a further slide from each animal was stained, according to the previously reported method, and microscope analysis was performed.

Deviations from Protocol

This phase of the study was conducted in compliance with the following additional Good Laboratory Practice Standards:

The UK Good Laboratory Practice Regulations (Statutory Instrument 1999 No. 3106, as amended by Statutory Instrument 2004 No. 994).

OECD Principles of Good Laboratory Practice (as revised in 1997), ENV/MC/CHEM(98)17.

EC Commission Directive 1999/11/EC of 8 March 1999 (Official Journal No L 77/8), as amended by EC Commission Directive 2004/10/EC of 11 February 2004 (Official Journal No L 50/44).

US EPA 79.60, CFR Vol. 59, No. 122, 27 June 1994.

ASSESSMENT OF RESULTS

The results for each treatment group were compared with the results for the concurrent negative control group using non-parametric statistics. Non-parametric statistical methods were chosen for analysis of results because:

- They are suited to analysis of data consisting of discrete/integer values with ties such as the incidence of micronucleated immature erythrocytes.
- The methods make few assumptions about the underlying distribution of data and therefore the values do not require transformation to fit a theoretical distribution (where data can be approximately fitted to a normal distribution, the results of non-parametric analysis and classical analysis of variance are very similar).
- 'Outliers' are frequently found in the proportion of immature erythrocytes for both control and treated animals; non-parametric analysis based on rank does not give these values an undue weighting.

For incidences of micronucleated immature erythrocytes, exact one-sided p-values are calculated by permutation (StatXact, CYTEL Software Corporation, Cambridge, Massachussetts). Comparison of several dose levels is made with the concurrent control using the Linear by Linear Association test for trend, in a step-down fashion if significance is detected (Agresti *et al.* 1990); for individual inter-group comparisons (*ie* the positive control group) this procedure simplifies to a straightforward permutation test (Gibbons 1985). For assessment of effects on the proportion of immature erythrocytes, equivalent permutation tests based on rank scores are used, *ie* exact versions of Wilcoxon's sum of ranks test and Jonckheere's test for trend.

A positive response is normally indicated by a statistically significant dose-related increase in the incidence of micronucleated immature erythrocytes for the treatment group compared with the concurrent control group ($P<0.01$); individual and/or group mean values should exceed the laboratory historical control range (Morrison and Ashby 1995).

A negative result is indicated where individual and group mean incidences of micronucleated immature erythrocytes for the group treated with the test substance are not significantly greater than incidences for the concurrent control group and where these values fall within the historical control range. An equivocal response is obtained when the results do not meet the criteria specified for a positive or negative response.

Bone marrow cell toxicity (or depression) is normally indicated by a substantial and statistically significant dose-related decrease in the proportion of immature erythrocytes ($P<0.01$).

MAINTENANCE OF RECORDS

All raw data, samples and specimens arising from the performance of this phase of the study will remain the property of the Sponsor.

Types of sample and specimen that are unsuitable, by reason of instability, for long term retention and archiving may be disposed after the periods stated in Huntingdon Life Sciences, Standard Operating Procedures.

All other samples and specimens and all raw data will be retained by Huntingdon Life Sciences PRC in its archive for a period of one year from the date on which the Study Director signs the final report. After such time, the Sponsor will be contacted and their advice sought on the return, disposal or further retention of the materials. If requested, Huntingdon Life Sciences will continue to retain the materials subject to a reasonable fee being agreed with the Sponsor.

Huntingdon Life Sciences will retain the Quality Assurance records relevant to this study and a copy of the final report in its archive indefinitely.

RESULTS

MICRONUCLEUS TEST

SLIDE SET 1

Initially, one slide per animal was scored (Slide set 1) and the results for individual animals are presented in Table 2.

Micronucleated immature erythrocyte counts (mie)

Individual values of micronucleated immature erythrocytes (mie) were observed in the range 0-2 for animals in the negative control group and animals exposed to Gasoline ETBE Vapor Condensate at the lowest level. At the intermediate and high exposure levels the range was 0-4.

Group mean values for the intermediate and high exposure levels (2.7 and 2.4 respectively) showed some increase over the group mean negative control value (1.2) and were outside the group mean historical control range.

Statistical analysis was performed on pooled data from both sexes and also from males and females separately (Table 1).

Permutation or Wilcoxon test

Statistical analysis showed no significant increases in the number of mie in rats treated with the test substance at any concentration, compared to negative control values, when male and female animals were combined.

When statistical analysis was performed using data from male animals only, there was no statistically significant increase over negative control values at any concentration.

Data from female animals showed a statistically significant increase in the number of mie at the intermediate dose group (10000 mg/m^3) only ($P<0.01$). No significant increase was recorded for the low and high dose groups.

Cyclophosphamide caused significant increases in the frequency of mie when the sexes were combined and significant increases for males and females individually ($P<0.001$ and $P<0.01$ respectively).

Linear by Linear trend test

Using combined sex data, there was a significant increase when groups 1 to 4 were included in the analysis (P<0.01). The trend test was not significant when Group 4 was excluded (high dose group). The increased incidence in Group 3 was not sufficient to give a statistically significant trend test.

When data was analysed for the individual sexes, no statistically significant trend was recorded for either males or females.

SLIDE SET 2

A further set of slides was scored (Slide set 2), at the request of the Sponsor, to ascertain if the results from Slide set 1 were reproducible. The results for individual animals are presented in Table 4.

Micronucleated immature erythrocyte counts (mie)

Individual values of mie were observed in the range 0-3 for animals in the negative control group and for animals exposed to ETBE Vapor Condensate at 2000, 10000 and 20000 mg/m^3 the ranges were 0-6, 1-6 and 1-7, respectively.

The group mean value for the negative control group was 1.8 and for the test substance treated groups was 2.2, 2.8 and 2.7, respectively.

Statistical analysis was performed on pooled data from both sexes and also from males and females separately (Table 3).

Permutation or Wilcoxon test

Statistical analysis showed no significant increases in the number of mie in rats treated with the test substance at any concentration, compared to negative control values, when data from male and female animals were combined or for the separate sexes.

Cyclophosphamide caused significant increases in the frequency of mie when the sexes were combined and significant increases for males and females individually (P<0.001 and P<0.01 respectively).

Linear by Linear trend test

The Linear by Linear trend test was not significant when male and females were combined or for the separate sexes.

COMBINED RESULTS – Slide sets 1 and 2

Data from Slide set 1 and Slide set 2 were combined.

Micronucleated immature erythrocyte counts (mie)

The group mean value of mie observed for animals in the negative control group and the low exposure group (2000 mg/m^3) was 1.5. At the intermediate and high exposure levels it was 2.8 and 2.6, respectively.

Statistical analysis was performed on pooled data from both sexes and also from males and females separately (Table 5).

Permutation or Wilcoxon test

Statistical analysis showed no significant increases in the number of mie in rats treated with the test substance at any concentration, compared to negative control values, when male and female animals were combined.

When statistical analysis was performed using data from male animals only, there was no statistically significant increase over negative control values at any concentration.

Data from female animals showed a statistically significant increase at the intermediate dose group (10000 mg/m^3) only ($P<0.01$). No significant increase was recorded for the low and high dose groups.

Cyclophosphamide caused significant increases in the frequency of mie when the sexes were combined and significant increases for males and females individually ($P<0.001$ and $P<0.01$ respectively).

Linear by Linear trend test

Using combined sex data, there was a significant increase when groups 1 to 4 were included in the analysis and with Group 4 excluded ($P<0.01$).

When data was analysed for the individual sexes, no statistically significant trend was recorded for males or females.

COMBINED RESULTS – Slide sets 1 and 2

Micronucleated mature erythrocytes (mme)

The test substance did not cause any substantial increases in the incidence of micronucleated mature erythrocytes for Slide sets 1 and 2 and the combined data.

Proportion of immature erythrocytes (% ie/[ie + me])

The test substance failed to cause any significant decreases in the proportion of immature erythrocytes for Slide sets 1 and 2 and the combined data.

Cyclophosphamide caused statistically significant decreases in the proportion for the combined data and Slide sets 1 and 2, except for female animals in Slide set 1, when no statistical significance was recorded but there was a reduction compared to negative control values.

DISCUSSION

A statistically significant increase in the incidence of micronucleated immature erythrocytes (mie) was recorded for female animals exposed to Gasoline ETBE Vapor Condensate at the intermediate dose group only (10000 mg/m^3) for Slide set 1 and the combined data. This increase was not dose related. In Slide set 2 there were no statistically significant increases for males or females, indicating that the result for Slide set 1 was not reproduced.

There was a significant linear trend for data from both males and females pooled together in Slide set 1 and when all data were combined. A significant linear trend was not seen when sexes were analysed separately.

In slide set 2, although there was an apparent increase in the group mean mie with increasing concentration, none of the values from animals exposed to Gasoline ETBE Vapour condensate were statistically significant compared to the negative control value.

One male animal from Slide set 2 showed an individual value (7) outside the historical control range for this laboratory (range 1 to 6). No animal from any dose group showed a mean individual value (Slide set 1 + Slide set 2 ÷2) outside the historical control range.

Increases in the incidence of mie were not considered to be of biological significance for the following reasons.

- The mean individual value for treated animals was within the historical control range throughout.
- The statistically significant increase observed in female animals (Slide set 1) was not dose related and not reproduced in Slide set 2.
- The trend test for combined sexes was significant for Slide set 1 but was not significant for Slide set 2.

CONCLUSION

Gasoline ETBE Vapor Condensate did not show conclusive evidence of an increase in the frequency of micronuclei in immature erythrocytes, and did not show any evidence that it caused bone marrow cell toxicity when administered by inhalation exposure in this *in vivo* test procedure.

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Table 1 Slide set 1 - Summary of results and statistical analysis (males and females)

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
24 Hours	Negative control	-	45 ± 36	1.2 ± 1.0	0.0 ± 0.0
	TS	2000	46 ± 2.5	0.8 ± 0.6	0.0 ± 0.0
	TS	10000	45 ± 3.2	2.7 ± 1.7	0.0 ± 0.0
	TS	20000	45 ± 2.5	2.4 ± 1.5**	0.0 ± 0.0
	Cyclophosphamide	40 mg/kg	37 ± 3.4***	22.7 ± 6.9***	0.6 ± 0.0

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells observed and calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

*** $P < 0.001$ (Highly significant - Permutation or Wilcoxon test)

** $P<0.01$ (Significant for Linear by Linear trend test when groups 1 to 4 included. Not significant when Group 4 excluded)

otherwise $P > 0.01$ (Not significant)

† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence **mme** (group mean):

$$\frac{\text{Sum of group incidence } \mathbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \mathbf{me} \text{ scored}}$$

Table 1 - Slide set 1 - Summary of results and statistical analysis (separate sexes) - continued

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
		MALES			
24 hours	Negative control	-	45 ± 2.4	1.6 ± 0.9	0.0 ± 0.0
	TS	2000	46 ± 2.3	0.6 ± 0.5	0.0 ± 0.0
	TS	10000	45 ± 3.8	1.6 ± 1.8	0.0 ± 0.0
	TS	20000	46 ± 1.8	2.8 ± 0.8	0.0 ± 0.0
	Cyclophosphamide	40 (mg/kg)	37 ± 1.4**	25.8 ± 4.5**	1.2 ± 0.5
		FEMALES			
24 hours	Negative control	-	45 ± 4.7	0.8 ± 1.1	0.0 ± 0.0
	TS	2000	45 ± 2.9	1.0 ± 0.7	0.0 ± 0.0
	TS	10000	45 ± 2.8	3.8 ± 0.4**	0.0 ± 0.0
	TS	20000	44 ± 3.2	2.0 ± 2.0	0.0 ± 0.0
	Cyclophosphamide	40 (mg/kg)	38 ± 4.8	19.6 ± 8.0**	0.0 ± 0.0

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells observed and calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

** $P < 0.01$ (Significant - Permutation test)
otherwise $P > 0.01$ (Not significant)

† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence mme (group mean):

$$\frac{\text{Sum of group incidence } \textbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \textbf{me} \text{ scored}}$$

Table 2 Slide set 1- Results for individual animals

Treatment	Exposure level (mg/m^3)	Animal number	ie	me	Proportion of ie	Incidence mie	Incidence mme
Negative control	-	M 1081	644	701	48	2	0
		M 1082	440	592	43	2	0
		M 1083	665	761	47	0	0
		M 1084	460	608	43	2	0
		M 1085	501	663	43	2	0
		F 1591	599	671	47	0	0
		F 1592	436	628	41	0	0
		F 1593	520	571	48	2	0
		F 1594	511	523	49	0	0
		F 1595	400	640	38	2	0
TS	2000	M 2071	602	635	49	1	0
		M 2072	479	531	47	0	0
		M 2073	460	588	44	1	0
		M 2074	567	609	48	1	0
		M 2075	461	589	44	0	0
		F 2581	604	740	45	2	0
		F 2582	452	602	43	1	0
		F 2583	503	576	47	1	0
		F 2584	605	614	50	1	0
		F 2585	432	580	43	0	0
TS	10000	M 3071	411	600	41	1	0
		M 3072	558	632	47	4	0
		M 3073	554	621	47	0	0
		M 3074	549	589	48	3	0
		M 3075	460	678	40	0	0
		F 3581	594	635	48	3	0
		F 3582	470	591	44	4	0
		F 3583	454	642	41	4	0
		F 3584	451	601	43	4	0
		F 3585	590	673	47	4	0
TS	20000	M 4081	557	635	47	3	0
		M 4082	513	589	47	2	0
		M 4083	452	601	43	4	0
		M 4084	532	659	45	3	0
		M 4085	506	565	47	2	0
		F 4591	495	593	45	2	0
		F 4592	511	561	48	0	0
		F 4593	493	639	44	4	0
		F 4594	470	725	39	4	0
		F 4595	601	710	46	0	0

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes
me Total number of mature erythrocytes examined for micronuclei
mme Number of micronucleated mature erythrocytes observed

Table 2 - Slide set 1- Results for individual animals - continued

Treatment	Dosage (mg/kg)	Animal number	ie	me	Proportion of ie	Incidence mie	Incidence mme
Cyclophosphamide	40 mg/kg	M 6051	397	673	37	28	1
		M 6052	403	693	37	32	1
		M 6053	395	711	36	22	0
		M 6054	367	686	35	21	0
		M 6055	445	706	39	26	0
		F 6561	433	663	40	24	0
		F 6562	371	700	35	18	0
		F 6563	365	674	35	12	0
		F 6564	486	577	46	13	0
		F 6565	390	731	35	31	0

ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes
me Total number of mature erythrocytes examined for micronuclei
mme Number of micronucleated mature erythrocytes observed

Table 3 Slide set 2 - Summary of results and statistical analysis (males and females)

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
24 Hours	Negative control	-	49 ± 3.6	1.8 ± 1.0	0.4 ± 0.3
	TS	2000	48 ± 5.0	2.2 ± 1.7	1.1 ± 0.5
	TS	10000	50 ± 4.4	2.8 ± 1.5	0.0 ± 0.0
	TS	20000	48 ± 6.8	2.7 ± 1.8	0.4 ± 0.3
	Cyclophosphamide	40 mg/kg	31 ± 5.1***	23.8 ± 10.3***	1.3 ± 0.7

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

*** $P < 0.001$ (Highly significant – Permutation or Wilcoxon test)

otherwise $P > 0.01$ (not significant)

† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence mme (group mean):

$$\frac{\text{Sum of group incidence } \textbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \textbf{me} \text{ scored}}$$

Table 3 - Slide set 2 - Summary of results and statistical analysis (separate sexes) - continued

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
		MALES			
24 hours	Negative control	-	50 ± 2.7	2.2 ± 0.8	0.0 ± 0.0
	TS	2000	51 ± 2.6	1.2 ± 0.8	0.8 ± 0.4
	TS	10000	51 ± 4.4	2.4 ± 1.1	0.0 ± 0.0
	TS	20000	48 ± 7.5	2.8 ± 2.5	0.0 ± 0.0
	Cyclophosphamide	40 (mg/kg)	32 ± 3.8**	30.0 ± 10.9**	1.5 ± 0.9
		FEMALES			
24 hours	Negative control	-	49 ± 4.6	1.4 ± 1.1	0.8 ± 0.4
	TS	2000	44 ± 4.1	3.2 ± 1.8	1.4 ± 0.5
	TS	10000	48 ± 4.2	3.2 ± 1.9	0.0 ± 0.0
	TS	20000	47 ± 6.8	2.6 ± 0.9	0.7 ± 0.4
	Cyclophosphamide	40 (mg/kg)	30 ± 6.3**	17.6 ± 5.1**	1.1 ± 0.5

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells observed and calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

** $P < 0.01$ (Significant - Permutation or Wilcoxon test)
otherwise $P > 0.01$ (not significant)

† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence mme (group mean):

$$\frac{\text{Sum of group incidence } \textbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \textbf{me} \text{ scored}}$$

Table 4 Slide set 2 - Results for individual animals

Treatment	Exposure level (mg/m^3)	Animal number	ie	me	Proportion of ie	Incidence mie	Incidence mme
Negative control	-	M 1081	548	472	54	2	0
		M 1082	479	526	48	3	0
		M 1083	534	523	51	2	0
		M 1084	509	503	50	1	0
		M 1085	494	563	47	3	0
		F 1591	527	514	51	0	1
		F 1592	565	501	53	3	0
		F 1593	453	589	43	1	0
		F 1594	548	484	53	2	0
		F 1595	464	576	45	1	0
TS	2000	M 2071	532	471	53	2	0
		M 2072	527	549	49	1	0
		M 2073	584	483	55	2	0
		M 2074	545	555	50	1	0
		M 2075	504	513	50	0	1
		F 2581	481	540	47	3	0
		F 2582	481	539	47	3	0
		F 2583	445	596	43	6	1
		F 2584	406	679	37	1	0
		F 2585	458	555	45	3	1
TS	10000	M 3071	508	495	51	1	0
		M 3072	558	447	56	4	0
		M 3073	543	473	53	2	0
		M 3074	540	493	52	3	0
		M 3075	474	603	44	2	0
		F 3581	494	532	48	3	0
		F 3582	551	513	52	2	0
		F 3583	530	763	41	4	0
		F 3584	492	545	47	1	0
		F 3585	526	510	51	6	0
TS	20000	M 4081	574	506	53	1	0
		M 4082	547	465	54	7	0
		M 4083	479	612	44	2	0
		M 4084	376	629	37	3	0
		M 4085	555	476	54	1	0
		F 4591	409	604	40	2	1
		F 4592	402	657	38	2	0
		F 4593	537	482	53	4	0
		F 4594	524	504	51	3	0
		F 4595	514	500	51	2	0

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes
me Total number of mature erythrocytes examined for micronuclei
mme Number of micronucleated mature erythrocytes observed

Table 4 - Slide set 2 - Results for individual animals - continued

Treatment	Dosage	Animal number	ie	me	Proportion of ie	Incidence mie	Incidence mme
Cyclophosphamide	40 mg/kg	M 6051	340	810	30	21	2
		M 6052	407	659	38	45	1
		M 6053	348	868	29	35	0
		M 6054	357	764	32	31	0
		M 6055	340	790	30	18	0
		F 6561	259	795	25	17	1
		F 6562	263	807	25	13	0
		F 6563	341	669	34	20	0
		F 6564	393	624	39	13	0
		F 6565	271	759	26	25	1

ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes
me Total number of mature erythrocytes examined for micronuclei
mme Number of micronucleated mature erythrocytes observed

Table 5 Combined summary of results and statistical analysis – Slide sets 1 and 2 (males and females)

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
24 Hours	Negative control	-	47 ± 4.2	1.5 ± 1.1	0.2 ± 0.2
	TS	2000	47 ± 3.9	1.5 ± 1.4	0.5 ± 0.4
	TS	10000	47 ± 4.5	2.8 ± 1.6**	0.0 ± 0.0
	TS	20000	46 ± 5.2	2.6 ± 1.6**	0.2 ± 0.2
	Cyclophosphamide	40 mg/kg	34 ± 5.4***	23.3 ± 8.6***	1.0 ± 0.6

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells observed and calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

*** $P < 0.001$ (Highly significant - Permutation or Wilcoxon test)

** $P<0.01$ (Significant for Linear by Linear trend test when Groups 1 to 4 included and with Group 4 excluded.

otherwise $P > 0.01$ (Not significant)

† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence **mme** (group mean):

$$\frac{\text{Sum of group incidence } \mathbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \mathbf{me} \text{ scored}}$$

Table 5 - Combined summary of results and statistical analysis –Slide sets 1 and 2 (separate sexes) - continued

Sampling time after last exposure	Treatment	Exposure level (mg/m^3)	Proportion of ie † (Mean ± SD)	Incidence mie (Mean ± SD)	Incidence mme (Mean ± SD)[a]
		MALES			
24 hours	Negative control	-	47 ± 3.6	1.9 ± 0.9	0.0 ± 0.0
	TS	2000	49 ± 3.4	0.9 ± 0.7	0.4 ± 0.3
	TS	10000	48 ± 5.2	2.0 ± 1.5	0.0 ± 0.0
	TS	20000	47 ± 5.4	2.8 ± 1.8	0.0 ± 0.0
	Cyclophosphamide	40 (mg/kg)	34 ± 3.8**	27.9 ± 8.2**	1.4 ± 0.7
		FEMALES			
24 hours	Negative control	-	47 ± 4.9	1.1 ± 1.1	0.4 ± 0.3
	TS	2000	45 ± 3.4	2.1 ± 1.7	0.7 ± 0.4
	TS	10000	46 ± 3.8	3.5 ± 1.4**	0.0 ± 0.0
	TS	20000	45 ± 5.1	2.3 ± 1.5	0.3 ± 0.3
	Cyclophosphamide	40 (mg/kg)	34 ± 6.7**	18.6 ± 6.4**	0.6 ± 0.4

TS Gasoline ETBE Vapor Condensate
ie Immature erythrocytes
mie Number of micronucleated cells observed per 2000 immature erythrocytes examined
me Mature erythrocytes
mme Number of micronucleated cells observed and calculated per 2000 mature erythrocytes
SD Standard deviation

Results of statistical analysis using the appropriate nonparametric method of analysis based on permutation (one-sided probabilities):

** $P < 0.01$ (Significant - Permutation test or Wilcoxon test)
otherwise $P > 0.01$ (not significant)

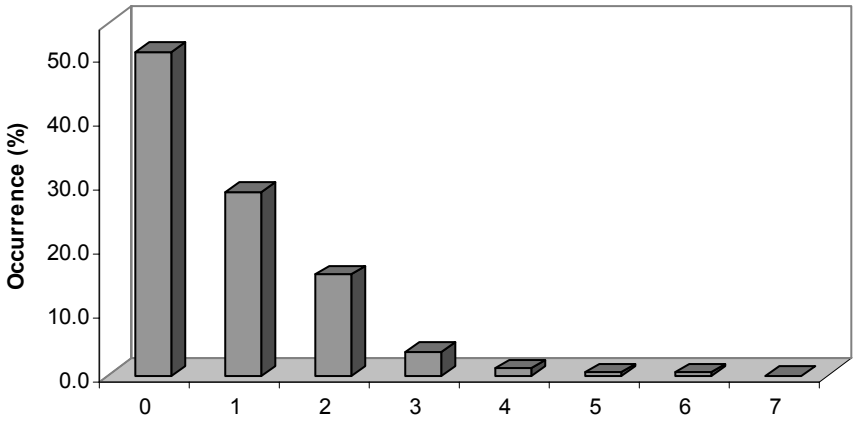
† Occasional apparent errors of ± 1% may occur due to rounding of values for presentation in the table

[a] Formula for calculation of incidence mme (group mean):

$$\frac{\text{Sum of group incidence } \textbf{mme} \text{ scored} \times 2000}{\text{Sum of group } \textbf{me} \text{ scored}}$$

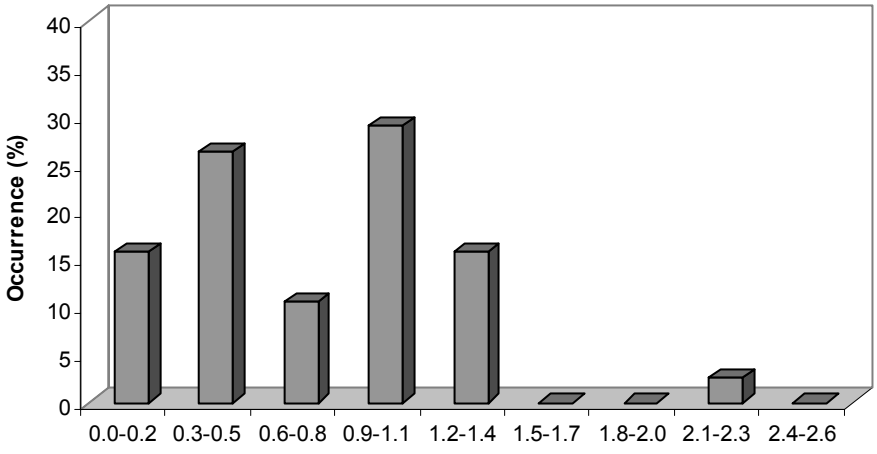
Appendix 1 Historical control values

Historical negative control values (1 July 2000 - 30 June 2002)
Frequency of micronucleated immature erythrocytes (individual animals)



Individual mean 0.79

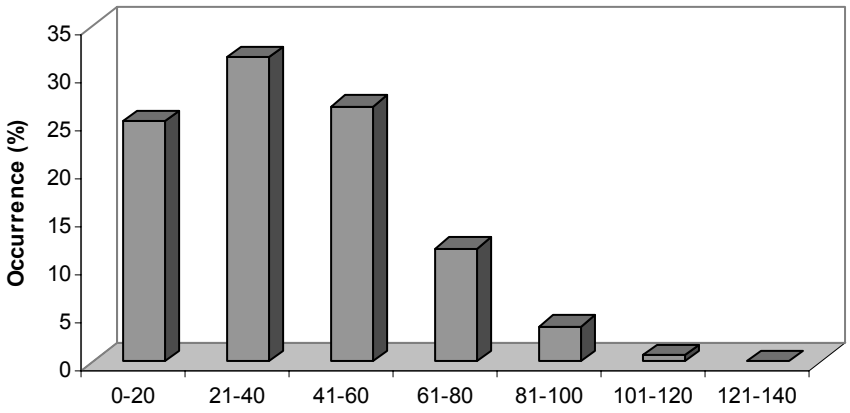
Historical negative control values (1 July 2000 - 30 June 2002)
Frequency of micronucleated immature erythrocytes (Group mean values)



Group mean 0.73

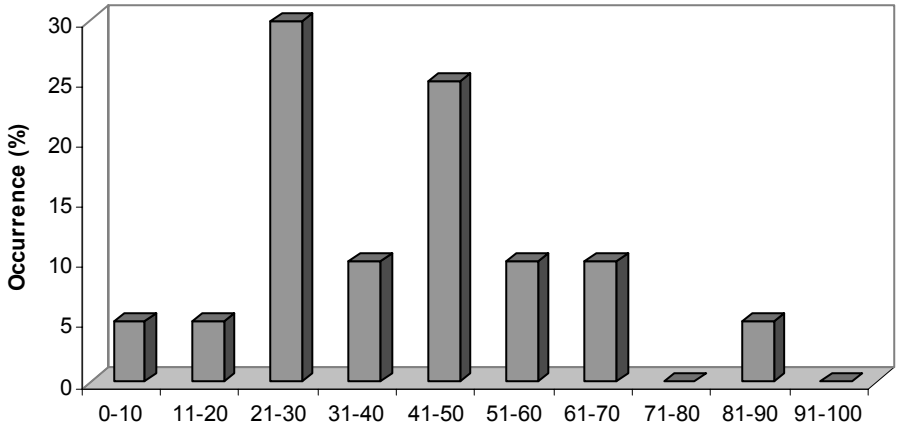
Appendix 1 – continued

Historical positive control values (1 July 2000 - 30 June 2002)
Frequency of micronucleated immature erythrocytes (Individual animals)
Cyclophosphamide



Individual mean 38.7

Historical positive control values (1 July 2000 - 30 June 2002)
Frequency of micronucleated immature erythrocytes (Group mean values)
Cyclophosphamide



Group mean 39.9

Appendix 2 Animal exposure and observations data

	Animal Exposure and Animal Data Preface	Appendix 2

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:	12 November 2001
Experimental Initiation Date:	23 November 2001 (in-life)
Experimental Completion Date:	20 December 2001 (in-life)
Draft Report Date:	19 June 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.

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TABLES

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

Chamber Monitoring Results
Cumulative Exposure Record
Group IA - 0 (air only) mg/m^3

Day	Date	Exposure Number	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
			Nominal	Mean	Individual				MMAD	GSD	TMC	Mean Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)				(µm)		(mg/m^3)	(°C)	(%)
31	23-Nov-01	1	0	0	0	0	0	0				25	52
32	24-Nov-01	2	0	0	0	0	0	0				25	53
34	26-Nov-01	3	0	0	0	0	0	0				25	48
35	27-Nov-01	4	0	0	0	0	0	0				24	49
36	28-Nov-01	5	0	0	0	0	0	0				24	50
37	29-Nov-01	6	0	0	0	0	0	0	1.046	1.964	1.94E-03	24	50
38	30-Nov-01	7	0	0	0	0	0	0				24	56
41	3-Dec-01	8	0	0	0	0	0	0				24	50
42	4-Dec-01	9	0	0	0	0	0	0				24	51
43	5-Dec-01	10	0	0	0	0	0	0				25	51
44	6-Dec-01	11	0	0	0	0	0	0	0.9233	1.647	2.32E-03	25	52
45	7-Dec-01	12	0	0	0	0	0	0				25	50
48	10-Dec-01	13	0	0	0	0	0	0				25	50
49	11-Dec-01	14	0	0	0	0	0	0				23	54
50	12-Dec-01	15	0	0	0	0	0	0				24	52
51	13-Dec-01	16	0	0	0	0	0	0	0.7808	1.691	2.30E-03	24	50
52	14-Dec-01	17	0	0	0	0	0	0				24	51
55	17-Dec-01	18	0	0	0	0	0	0				24	51
56	18-Dec-01	19	0	0	0	0	0	0				25	53
57	19-Dec-01	20	0	0	0	0	0	0				25	52
		Mean	**0**		**0**				**0.9167**	**1.767**	**2.19E-03**	**24.4**	**51.3**
		S.D.	**0**		**0**				**0.133**	**0.172**	**2.14E-04**	**0.6**	**1.8**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
			Nominal	Mean	Individual							Mean Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)				MMAD (µm)	GSD	TMC (mg/m^3)	(°C)	(%)
31	23-Nov-01	1	0	0	0	0	0	0				24	54
32	24-Nov-01	2	0	0	0	0	0	0				24	55
34	26-Nov-01	3	0	0	0	0	0	0				24	50
35	27-Nov-01	4	0	0	0	0	0	0				24	51
36	28-Nov-01	5	0	0	0	0	0	0				24	52
37	29-Nov-01	6	0	0	0	0	0	0	1.811	2.481	4.57E-03	24	52
38	30-Nov-01	7	0	0	0	0	0	0				24	57
41	3-Dec-01	8	0	0	0	0	0	0				25	51
42	4-Dec-01	9	0	0	0	0	0	0				24	53
43	5-Dec-01	10	0	0	0	0	0	0				24	54
44	6-Dec-01	11	0	0	0	0	0	0	6.742	3.378	9.03E-03	24	54
45	7-Dec-01	12	0	0	0	0	0	0				24	52
48	10-Dec-01	13	0	0	0	0	0	0				24	52
49	11-Dec-01	14	0	0	0	0	0	0				24	54
50	12-Dec-01	15	0	0	0	0	0	0				24	53
51	13-Dec-01	16	0	0	0	0	0	0	0.7426	1.477	1.85E-03	24	50
52	14-Dec-01	17	0	0	0	0	0	0				24	52
55	17-Dec-01	18	0	0	0	0	0	0				25	51
56	18-Dec-01	19	0	0	0	0	0	0				24	52
57	19-Dec-01	20	0	0	0	0	0	0				24	55
		Mean	**0**		**0**				**3.099**	**2.445**	**5.15E-03**	**24.1**	**52.7**
		S.D.	**0**		**0**				**3.200**	**0.951**	**3.62E-03**	**0.3**	**1.8**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
			Nominal	Mean	Individual				MMAD	GSD	TMC	Mean Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)				(µm)		(mg/m^3)	(°C)	(%)
31	23-Nov-01	1	2270	2000	1910	2100	1840	2150				24	49
32	24-Nov-01	2	2210	2035	2210	2090	1940	1900				24	49
34	26-Nov-01	3	2260	1990	1910	1990	2000	2060				24	45
35	27-Nov-01	4	2250	2045	2090	1840	2300	1950				23	48
36	28-Nov-01	5	2240	2028	2310	2130	1940	1730				23	47
37	29-Nov-01	6	2150	2000	1890	1880	1980	2250	1.042	1.662	1.94E-03	23	48
38	30-Nov-01	7	2240	1975	2030	2080	1700	2090				23	54
41	3-Dec-01	8	2160	2013	2000	2110	1960	1980				23	48
42	4-Dec-01	9	2160	2000	2050	2030	1920	2000				24	47
43	5-Dec-01	10	2070	2145	2340	2260	2070	1910				24	48
44	6-Dec-01	11	2220	1923	2060	1980	1810	1840	0.9014	1.876	2.75E-03	24	48
45	7-Dec-01	12	2080	1968	2080	2040	1680	2070				24	47
48	10-Dec-01	13	1890	2015	2580	1420	1950	2110				24	47
49	11-Dec-01	14	2060	2003	1960	1510	2400	1410				23	49
50	12-Dec-01	15	2360	2220	2380	2000	2480	2020				23	49
51	13-Dec-01	16	2260	2155	2030	2400	2250	1940	0.9658	2.407	2.51E-03	23	47
52	14-Dec-01	17	2220	2130	2350	2050	2040	2080				23	48
55	17-Dec-01	18	2130	2050	2350	1840	1920	2090				24	48
56	18-Dec-01	19	2160	2130	1960	2120	2270	2170				24	47
57	19-Dec-01	20	2180	2063	2220	2080	1890	2060				24	49
		Mean	**2179**		**2035**				**0.9697**	**1.982**	**2.40E-03**	**23.6**	**48.1**
		S.D.	**101**		**210**				**0.070**	**0.384**	**4.16E-04**	**0.5**	**1.7**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Nominal	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment Mean	
				Mean	Individual					MMAD	GSD	TMC	Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)					(µm)		(mg/m^3)	(°C)	(%)
31	23-Nov-01	1	2270	2103	2150	2100	2110	2050					23	51
32	24-Nov-01	2	2210	1988	1850	1840	2090	2170					23	51
34	26-Nov-01	3	2260	2068	2120	1870	2170	2110					23	47
35	27-Nov-01	4	2250	1938	1610	2070	2090	1980					23	48
36	28-Nov-01	5	2240	2108	1870	2080	2260	2220					23	48
37	29-Nov-01	6	2150	1973	2030	1870	2110	1880		1.046	1.589	1.83E-03	23	50
38	30-Nov-01	7	2240	2120	1840	1760	2340	2540					23	54
41	3-Dec-01	8	2160	2008	2240	1810	2030	1950					23	48
42	4-Dec-01	9	2160	2110	2210	2010	2250	1970					23	50
43	5-Dec-01	10	2070	2110	2150	2020	2100	2170					23	50
44	6-Dec-01	11	2220	1995	2120	2060	1980	1820		0.8575	1.532	2.71E-03	23	52
45	7-Dec-01	12	2080	2238	2290	2350	1670	2640					23	49
48	10-Dec-01	13	1890	2228	2770	1830	2350	1960					23	49
49	11-Dec-01	14	2060	2063	2350	1980	2350	1570					23	50
50	12-Dec-01	15	2360	2378	2770	2570	2100	2070					23	50
51	13-Dec-01	16	2260	2120	2400	1880	2220	1980		3.402	3.001	5.81E-03	23	48
52	14-Dec-01	17	2220	2040	1890	1870	2100	2300					23	49
55	17-Dec-01	18	2130	2115	2300	2010	2230	1920					24	49
56	18-Dec-01	19	2160	1963	2030	1840	1960	2020					23	51
57	19-Dec-01	20	2180	1993	2100	1860	1880	2130					23	51
		Mean	**2179**		**2083**					**1.769**	**2.041**	**3.45E-03**	**23.1**	**49.8**
		S.D.	**101**		**232**					**1.418**	**0.832**	**2.09E-03**	**0.2**	**1.7**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Nominal	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment Mean	
				Mean	Individual					MMAD	GSD	TMC	Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)					(µm)		(mg/m^3)	(°C)	(%)
31	23-Nov-01	1	11200	10040	9790	10700	9460	10200					24	48
32	24-Nov-01	2	10700	9300	10500	9360	8540	8800					24	50
34	26-Nov-01	3	10700	9005	8520	10500	9130	7870					24	46
35	27-Nov-01	4	10700	10420	9060	10500	11800	10300					23	48
36	28-Nov-01	5	10600	10180	10300	10800	9890	9720					23	48
37	29-Nov-01	6	11200	10250	9890	10500	10500	10100		1.460	2.555	3.01E-03	23	49
38	30-Nov-01	7	10400	9750	9090	9490	10800	9620					23	54
41	3-Dec-01	8	10400	9613	10300	8460	10200	9490					23	47
42	4-Dec-01	9	11200	10500	10500	10500	10500	10500					24	48
43	5-Dec-01	10	10700	10200	10500	9790	10000	10500					24	49
44	6-Dec-01	11	10500	9453	9460	8800	9790	9760		0.9809	1.829	2.97E-03	24	48
45	7-Dec-01	12	11100	10350	10400	10500	10400	10100					24	47
48	10-Dec-01	13	10400	10120	10100	10100	10500	9790					24	46
49	11-Dec-01	14	11200	10120	10100	10900	9390	10100					23	48
50	12-Dec-01	15	10200	9590	8540	9790	9230	10800					23	50
51	13-Dec-01	16	10800	10430	11900	11500	8770	9560		0.9910	2.266	3.35E-03	23	48
52	14-Dec-01	17	11000	10500	10100	10100	11000	10800					23	50
55	17-Dec-01	18	11000	10450	10800	10100	10800	10100					23	48
56	18-Dec-01	19	10600	9915	10000	9360	10100	10200					24	48
57	19-Dec-01	20	10300	10450	10400	10800	10500	10100					24	49
		Mean	**10745**		**10031**					**1.144**	**2.217**	**3.11E-03**	**23.5**	**48.5**
		S.D.	**328**		**747**					**0.274**	**0.366**	**2.09E-04**	**0.5**	**1.7**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
			Nominal	Mean	Individual				MMAD	GSD	TMC	Mean Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)				(µm)		(mg/m^3)	(°C)	(%)
31	23-Nov-01	1	11200	10230	10100	11100	9620	10100				23	46
32	24-Nov-01	2	10700	10410	8930	10500	10800	11400				23	48
34	26-Nov-01	3	10700	9455	7670	9790	9860	10500				23	45
35	27-Nov-01	4	10700	9840	10300	9330	10400	9330				24	45
36	28-Nov-01	5	10600	10470	11000	11100	10300	9460				24	46
37	29-Nov-01	6	11200	10260	11100	10600	9890	9460	1.035	1.778	2.97E-03	24	45
38	30-Nov-01	7	10400	9853	9960	10100	9960	9390				24	50
41	3-Dec-01	8	10400	10090	10500	9960	10100	9790				24	45
42	4-Dec-01	9	11200	10500	10900	10100	10500	10500				23	46
43	5-Dec-01	10	10700	10630	11000	9820	10900	10800				23	47
44	6-Dec-01	11	10500	9828	10500	9330	9790	9690	0.8592	1.606	2.51E-03	24	46
45	7-Dec-01	12	11100	10430	10200	10100	10600	10800				23	45
48	10-Dec-01	13	10400	9603	8690	9460	9460	10800				23	45
49	11-Dec-01	14	11200	10850	11800	11300	9790	10500				24	45
50	12-Dec-01	15	10200	10190	8960	10800	9790	11200				24	46
51	13-Dec-01	16	10800	9518	9960	9560	8760	9790	0.7420	2.021	5.17E-03	24	45
52	14-Dec-01	17	11000	10230	10100	10200	10500	10100				24	45
55	17-Dec-01	18	11000	9960	9290	9960	10700	9890				24	44
56	18-Dec-01	19	10600	9848	9990	8900	10000	10500				23	45
57	19-Dec-01	20	10300	10160	9790	10300	9460	11100				24	46
		Mean	**10745**		**10117**				**0.8787**	**1.802**	**3.55E-03**	**23.6**	**45.8**
		S.D.	**328**		**708**				**0.1475**	**0.209**	**1.42E-03**	**0.5**	**1.3**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Nominal	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
				Mean	Individual								Mean	
			(mg/m^3)	(mg/m^3)	(mg/m^3)					MMAD (μm)	GSD	TMC (mg/m^3)	Temperature (°C)	Humidity (%)
31	23-Nov-01	1	20400	20480	19700	20900	21100	20200					25	50
32	24-Nov-01	2	20200	20330	20500	20200	20100	20500					25	51
34	26-Nov-01	3	19800	20080	20200	19700	20500	19900					26	48
35	27-Nov-01	4	19700	20380	19400	20800	20200	21100					24	48
36	28-Nov-01	5	19200	19750	19500	18800	20500	20200					24	49
37	29-Nov-01	6	19900	20150	20600	19900	19900	20200		0.9850	1.432	1.66E-03	24	50
38	30-Nov-01	7	19000	19480	18800	19700	19700	19700					24	55
41	3-Dec-01	8	18900	19400	19200	19800	18000	20600					25	48
42	4-Dec-01	9	19600	20250	18900	21200	21200	19700					26	49
43	5-Dec-01	10	20600	20430	20400	19900	20600	20800					26	49
44	6-Dec-01	11	19400	19980	21300	17700	20000	20900		0.9092	1.905	2.69E-03	26	50
45	7-Dec-01	12	20000	19900	20000	21200	19000	19400					26	47
48	10-Dec-01	13	20800	19550	18900	19400	18900	21000					26	47
49	11-Dec-01	14	18700	19730	19700	18300	21200	19700					24	48
50	12-Dec-01	15	20300	20630	20700	20900	20500	20400					25	49
51	13-Dec-01	16	20000	19880	20000	20400	19500	19600		0.7134	1.424	2.95E-03	24	48
52	14-Dec-01	17	19400	19150	18100	20100	19900	18500					24	50
55	17-Dec-01	18	18000	18880	18800	20800	19000	16900					25	48
56	18-Dec-01	19	20100	20030	19400	20100	20100	20500					26	47
57	19-Dec-01	20	19200	19880	19000	20000	20800	19700					26	48
		Mean	**19660**		**19914**					**0.8692**	**1.587**	**2.43E-03**	**25.1**	**49.0**
		S.D.	**695**		**881**					**0.1401**	**0.275**	**6.82E-04**	**0.9**	**1.8**

Table A GASOLINE ETBE VAPOR CONDENSATE: A 13-WEEK WHOLE-BODY INHALATION TOXICITY STUDY IN RATS 00-6129

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

Day	Date	Exposure Number	Nominal	Analytical Chamber Concentration						Particle Size Determinations			Chamber Environment	
				Mean	Individual								Mean Temperature	Humidity
			(mg/m^3)	(mg/m^3)	(mg/m^3)					MMAD (µm)	GSD	TMC (mg/m^3)	(°C)	(%)
31	23-Nov-01	1	20400	21150	20600	21200	21600	21200					24	49
32	24-Nov-01	2	20200	19900	19400	20400	19600	20200					24	52
34	26-Nov-01	3	19800	20280	19800	21200	20200	19900					24	48
35	27-Nov-01	4	19700	19450	19200	19500	18600	20500					25	48
36	28-Nov-01	5	19200	20130	18600	21600	20600	19700					25	49
37	29-Nov-01	6	19900	19600	18600	20500	19900	19400		1.201	2.588	3.51E-03	25	49
38	30-Nov-01	7	19000	19130	19100	19400	19400	18600					25	54
41	3-Dec-01	8	18900	19600	19200	19800	18800	20600					25	48
42	4-Dec-01	9	19600	20400	19400	20500	21200	20500					24	49
43	5-Dec-01	10	20600	20780	20500	21200	20700	20700					24	49
44	6-Dec-01	11	19400	19800	21200	17300	19900	20800		1.784	3.162	7.82E-03	24	50
45	7-Dec-01	12	20000	19800	19400	19700	20100	20000					24	48
48	10-Dec-01	13	20800	19780	19700	19700	19400	20300					24	48
49	11-Dec-01	14	18700	19330	18600	17700	21300	19700					26	47
50	12-Dec-01	15	20300	19630	18500	20500	19400	20100					25	48
51	13-Dec-01	16	20000	19130	19300	19600	18900	18700		0.7145	1.806	6.92E-03	25	48
52	14-Dec-01	17	19400	19730	18600	19700	19800	20800					25	48
55	17-Dec-01	18	18000	19280	18800	18800	20100	19400					25	48
56	18-Dec-01	19	20100	19850	19700	19700	19400	20600					24	49
57	19-Dec-01	20	19200	20000	19200	20700	19700	20400					24	49
		Mean	**19660**		**19835**					**1.233**	**2.519**	**6.08E-03**	**24.6**	**48.9**
		S.D.	**695**		**883**					**0.535**	**0.681**	**2.27E-03**	**0.6**	**1.6**

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE B

GASOLINE ETBE 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 -3	TOTAL
# OF ANIMALS EXAMINED	1	5	
	2	5	
	3	5	
	4	5	
	6	5	
NORMAL			
WITHIN NORMAL LIMITS	1	5	5
	2	5	5
	3	5	5
	4	5	5
	6	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE B

GASOLINE ETBE 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 -3	TOTAL
# OF ANIMALS EXAMINED	1	5	
	2	5	
	3	5	
	4	5	
	6	5	
NORMAL			
WITHIN NORMAL LIMITS	1	5	5
	2	5	5
	3	5	5
	4	5	5
	6	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE C

GASOLINE ETBE 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	VI
DOSE LEVEL (MG/M3):		0	2000	10000	20000	MICRO+CONTROL
WEEK -1	MEAN	130	131	131	129	129
	S.D.	9.1	6.8	9.7	10.3	14.7
	N	5	5	5	5	5
WEEK 0	MEAN	172	171	171	170	171
	S.D.	11.7	11.0	10.1	11.1	16.8
	N	5	5	5	5	5
WEEK 1	MEAN	232	227	227	223	234
	S.D.	16.9	15.4	16.3	15.2	20.1
	N	5	5	5	5	5
WEEK 2	MEAN	287	277	278	271	289
	S.D.	20.1	21.0	17.0	16.3	18.8
	N	5	5	5	5	5
WEEK 3	MEAN	336	322	325	320	337
	S.D.	20.0	24.4	19.8	23.7	18.6
	N	5	5	5	5	5
WEEK 4	MEAN	375	359	365	356	377
	S.D.	23.9	28.0	23.6	24.3	19.1
	N	5	5	5	5	5

No statistically significant differences

TABLE C

GASOLINE ETBE 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	VI
DOSE LEVEL (MG/M3):		0	2000	10000	20000	MICRO+CONTROL
WEEK -1	MEAN	105	104	106	105	106
	S.D.	6.0	3.9	5.0	4.6	5.0
	N	5	5	5	5	5
WEEK 0	MEAN	136	136	137	136	137
	S.D.	5.0	3.8	5.0	3.7	5.3
	N	5	5	5	5	5
WEEK 1	MEAN	176	174	172	167	181
	S.D.	12.4	10.5	5.8	6.8	7.1
	N	5	5	5	5	5
WEEK 2	MEAN	207	199	199	191	205
	S.D.	17.3	13.7	9.0	6.9	10.4
	N	5	5	5	5	5
WEEK 3	MEAN	237	226	223	218	232
	S.D.	21.1	19.0	11.3	10.8	5.7
	N	5	5	5	5	5
WEEK 4	MEAN	259	246	245	236	252
	S.D.	18.8	20.0	15.8	12.5	10.6
	N	5	5	5	5	5

No statistically significant differences

TABLE D

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

	DOSE GROUP:	I	II	III	IV	VI
	DOSE LEVEL (MG/M3):	0	2000	10000	20000	MICRO+CONTROL
WEEK 0 TO 1	MEAN	60	56	55	53	63
	S.D.	6.2	7.2	7.6	6.1	3.5
	N	5	5	5	5	5
WEEK 0 TO 2	MEAN	115	106	107	101	118
	S.D.	11.3	12.8	9.3	8.9	4.5
	N	5	5	5	5	5
WEEK 0 TO 3	MEAN	165	151	154	150	167
	S.D.	12.0	17.7	12.0	14.4	6.1
	N	5	5	5	5	5
WEEK 0 TO 4	MEAN	203	187	193	186	206
	S.D.	15.5	21.7	15.6	14.9	7.5
	N	5	5	5	5	5

No statistically significant differences

TABLE D

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

DOSE GROUP:		I	II	III	IV	VI
DOSE LEVEL (MG/M3):		0	2000	10000	20000	MICRO+CONTROL
WEEK 0 TO 1	MEAN	40	38	35	31	44
	S.D.	9.2	8.9	5.8	3.8	7.0
	N	5	5	5	5	5
WEEK 0 TO 2	MEAN	70	63	62	55	67
	S.D.	13.9	10.4	8.4	3.8	7.9
	N	5	5	5	5	5
WEEK 0 TO 3	MEAN	101	89	86	82	95
	S.D.	17.7	15.8	8.8	7.9	6.3
	N	5	5	5	5	5
WEEK 0 TO 4	MEAN	123	110	107	100	115
	S.D.	15.9	16.5	15.3	9.4	11.0
	N	5	5	5	5	5

No statistically significant differences

TABLE E

GASOLINE ETBE 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	VI
		DOSE LEVEL (MG/M3):	0	2000	10000	20000	MICRO+CONTROL
WEEK	0	MEAN	140	137	136	136	158
		S.D.	5.7	4.7	2.6	5.5	38.2
		N	5	5	5	5	5
WEEK	1	MEAN	117	116	115	113	121
		S.D.	4.2	4.4	4.0	5.4	5.3
		N	5	5	5	5	5
WEEK	2	MEAN	98	100	96	96	102
		S.D.	4.3	2.3	1.0	3.3	5.8
		N	5	4	5	5	5
WEEK	3	MEAN	88	90	87	88	90
		S.D.	2.6	1.6	1.6	3.9	5.7
		N	5	5	5	5	5
WEEK	4	MEAN	79	80	79	80	80
		S.D.	2.0	1.4	2.1	2.1	4.7
		N	5	5	5	5	5

No statistically significant differences

TABLE E

GASOLINE ETBE 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	VI
	DOSE LEVEL (MG/M3):	0	2000	10000	20000	MICRO+CONTROL
WEEK 0	MEAN	144	144	141	147	143
	S.D.	3.2	5.7	5.1	7.6	7.7
	N	5	4	5	5	5
WEEK 1	MEAN	121	119	120	118	125
	S.D.	3.4	5.8	5.8	3.5	8.4
	N	5	5	5	5	5
WEEK 2	MEAN	104	106	108	105	108
	S.D.	5.9	5.5	14.1	5.0	3.3
	N	5	5	5	4	5
WEEK 3	MEAN	96	98	96	94	98
	S.D.	5.0	7.6	4.9	5.7	3.1
	N	5	5	5	5	5
WEEK 4	MEAN	88	93	91	86	88
	S.D.	5.3	8.4	6.9	3.9	5.0
	N	5	5	5	5	5

No statistically significant differences

TABLE F

GASOLINE ETBE 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 - 3
1081	WITHIN NORMAL LIMITS	P
1082	WITHIN NORMAL LIMITS	P
1083	WITHIN NORMAL LIMITS	P
1084	WITHIN NORMAL LIMITS	P
1085	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 2000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
2071	WITHIN NORMAL LIMITS	P
2072	WITHIN NORMAL LIMITS	P
2073	WITHIN NORMAL LIMITS	P
2074	WITHIN NORMAL LIMITS	P
2075	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 10000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
3071	WITHIN NORMAL LIMITS	P
3072	WITHIN NORMAL LIMITS	P
3073	WITHIN NORMAL LIMITS	P
3074	WITHIN NORMAL LIMITS	P
3075	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 20000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
4081	WITHIN NORMAL LIMITS	P
4082	WITHIN NORMAL LIMITS	P
4083	WITHIN NORMAL LIMITS	P
4084	WITHIN NORMAL LIMITS	P
4085	WITHIN NORMAL LIMITS	P

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

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE F

GASOLINE ETBE 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 VI MICRO+CONTROL

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
6051	WITHIN NORMAL LIMITS	P
6052	WITHIN NORMAL LIMITS	P
6053	WITHIN NORMAL LIMITS	P
6054	WITHIN NORMAL LIMITS	P
6055	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 - 3
1591	WITHIN NORMAL LIMITS	P
1592	WITHIN NORMAL LIMITS	P
1593	WITHIN NORMAL LIMITS	P
1594	WITHIN NORMAL LIMITS	P
1595	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 2000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
2581	WITHIN NORMAL LIMITS	P
2582	WITHIN NORMAL LIMITS	P
2583	WITHIN NORMAL LIMITS	P
2584	WITHIN NORMAL LIMITS	P
2585	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 10000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
3581	WITHIN NORMAL LIMITS	P
3582	WITHIN NORMAL LIMITS	P
3583	WITHIN NORMAL LIMITS	P
3584	WITHIN NORMAL LIMITS	P
3585	WITHIN NORMAL LIMITS	P

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

TABLE F

GASOLINE ETBE 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 20000 MG/M3

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
4591	WITHIN NORMAL LIMITS	P
4592	WITHIN NORMAL LIMITS	P
4593	WITHIN NORMAL LIMITS	P
4594	WITHIN NORMAL LIMITS	P
4595	WITHIN NORMAL LIMITS	P

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

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE F

GASOLINE ETBE 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 VI MICRO+CONTROL

ANIMAL#	OBSERVATIONS	DAY OF STUDY - 3
6561	WITHIN NORMAL LIMITS	P
6562	WITHIN NORMAL LIMITS	P
6563	WITHIN NORMAL LIMITS	P
6564	WITHIN NORMAL LIMITS	P
6565	WITHIN NORMAL LIMITS	P

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

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE G

GASOLINE ETBE 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
1081	123	164	223	275	325	359
1082	130	170	234	288	339	371
1083	121	158	208	260	309	348
1084	144	188	251	301	348	390
1085	133	178	243	310	361	407
MEAN	130	172	232	287	336	375
S.D.	9.1	11.7	16.9	20.1	20.0	23.9
N	5	5	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE G

GASOLINE ETBE 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 2000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
2071	127	170	233	279	332	366
2072	122	154	202	245	285	319
2073	132	172	228	289	338	380
2074	134	179	227	273	312	342
2075	140	183	244	301	345	386
MEAN	131	171	227	277	322	359
S.D.	6.8	11.0	15.4	21.0	24.4	28.0
N	5	5	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE G

GASOLINE ETBE 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 10000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
3071	119	157	199	249	293	329
3072	141	183	241	292	344	391
3073	124	167	226	278	323	359
3074	140	179	235	284	329	365
3075	130	171	232	288	338	380
MEAN	131	171	227	278	325	365
S.D.	9.7	10.1	16.3	17.0	19.8	23.6
N	5	5	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE G

GASOLINE ETBE 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 20000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
4081	114	153	201	250	286	320
4082	129	167	214	261	305	342
4083	136	176	230	273	334	375
4084	126	172	234	287	339	373
4085	141	182	238	287	337	370
MEAN	129	170	223	271	320	356
S.D.	10.3	11.1	15.2	16.3	23.7	24.3
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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 VI MICRO+CONTROL

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
6051	111	147	204	261	310	352
6052	122	162	225	284	334	372
6053	132	175	240	296	346	387
6054	132	178	244	290	335	371
6055	151	191	257	313	361	403
MEAN	129	171	234	289	337	377
S.D.	14.7	16.8	20.1	18.8	18.6	19.1
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
1591	97	132	173	200	234	262
1592	109	138	190	227	259	279
1593	106	136	173	204	236	252
1594	102	132	158	183	205	231
1595	113	144	186	220	254	273
MEAN	105	136	176	207	237	259
S.D.	6.0	5.0	12.4	17.3	21.1	18.8
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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 2000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
2581	101	138	173	203	239	260
2582	108	137	170	198	218	251
2583	108	141	186	218	249	266
2584	100	133	182	197	222	240
2585	102	131	159	180	200	215
MEAN	104	136	174	199	226	246
S.D.	3.9	3.8	10.5	13.7	19.0	20.0
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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 10000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
3581	104	135	167	189	208	223
3582	107	139	171	198	223	239
3583	101	132	176	207	226	260
3584	103	136	167	193	219	241
3585	114	145	180	210	239	261
MEAN	106	137	172	199	223	245
S.D.	5.0	5.0	5.8	9.0	11.3	15.8
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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 20000 MG/M3

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
4591	105	140	169	199	229	245
4592	109	136	170	190	208	227
4593	109	139	174	196	230	253
4594	104	134	163	183	213	233
4595	98	131	157	185	211	223
MEAN	105	136	167	191	218	236
S.D.	4.6	3.7	6.8	6.9	10.8	12.5
N	5	5	5	5	5	5

TABLE G

GASOLINE ETBE 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 VI MICRO+CONTROL

	WEEK OF STUDY					
ANIMAL#	-1	0	1	2	3	4
6561	105	136	182	213	238	267
6562	111	145	188	217	236	254
6563	105	135	169	191	223	237
6564	111	139	181	204	230	253
6565	99	131	184	199	232	249
MEAN	106	137	181	205	232	252
S.D.	5.0	5.3	7.1	10.4	5.7	10.6
N	5	5	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

MALES GROUP I 0 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
1081	59	110	161	195
1082	63	118	169	201
1083	50	102	151	190
1084	63	113	160	202
1085	66	132	183	230
MEAN	60	115	165	203
S.D.	6.2	11.3	12.0	15.5
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

MALES GROUP II 2000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
2071	64	110	162	196
2072	48	90	131	164
2073	57	117	167	209
2074	48	94	133	163
2075	61	118	162	203
MEAN	56	106	151	187
S.D.	7.2	12.8	17.7	21.7
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

MALES GROUP III 10000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
3071	42	92	136	172
3072	58	109	161	208
3073	59	111	156	192
3074	56	106	150	186
3075	61	117	167	209
MEAN	55	107	154	193
S.D.	7.6	9.3	12.0	15.6
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

MALES GROUP IV 20000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
4081	49	97	133	167
4082	47	94	137	175
4083	54	96	158	199
4084	62	116	168	201
4085	55	104	155	188
MEAN	53	101	150	186
S.D.	6.1	8.9	14.4	14.9
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

MALES GROUP VI MICRO+CONTROL

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
6051	58	114	163	205
6052	63	122	172	210
6053	65	121	171	212
6054	66	113	158	194
6055	66	121	170	211
MEAN	63	118	167	206
S.D.	3.5	4.5	6.1	7.5
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

FEMALES GROUP I 0 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
1591	41	68	102	130
1592	52	89	121	141
1593	38	68	100	116
1594	26	51	73	99
1595	42	76	110	129
MEAN	40	70	101	123
S.D.	9.2	13.9	17.7	15.9
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

FEMALES GROUP II 2000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
2581	34	64	100	122
2582	33	61	81	114
2583	46	78	109	125
2584	49	64	89	107
2585	28	49	68	84
MEAN	38	63	89	110
S.D.	8.9	10.4	15.8	16.5
N	5	5	5	5

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

FEMALES GROUP III 10000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
3581	32	54	73	88
3582	32	58	84	99
3583	45	75	94	128
3584	31	57	83	106
3585	35	65	94	116
MEAN	35	62	86	107
S.D.	5.8	8.4	8.8	15.3
N	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

FEMALES GROUP IV 20000 MG/M3

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
4591	30	60	89	105
4592	35	54	72	91
4593	35	56	91	113
4594	29	49	79	99
4595	26	54	80	92
MEAN	31	55	82	100
S.D.	3.8	3.8	7.9	9.4
N	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE H

GASOLINE ETBE 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 FROM BASELINE (GRAMS)

FEMALES GROUP VI MICRO+CONTROL

	WEEK OF STUDY			
ANIMAL#	0-1	0-2	0-3	0-4
6561	46	77	102	131
6562	43	72	91	109
6563	34	56	88	102
6564	42	65	91	114
6565	53	68	101	119
MEAN	44	67	95	115
S.D.	7.0	7.9	6.3	11.0
N	5	5	5	5

TABLE I

GASOLINE ETBE 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

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
1081	142	115	94	85	76
1082	139	120	102	91	79
1083	142	114	100	90	80
1084	131	113	93	85	77
1085	147	123	102	88	81
MEAN	140	117	98	88	79
S.D.	5.7	4.2	4.3	2.6	2.0
N	5	5	5	5	5

TABLE I

GASOLINE ETBE 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 2000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
2071	142	123	SF	92	81
2072	130	112	102	90	82
2073	134	112	102	90	80
2074	139	114	98	88	78
2075	139	116	98	88	80
MEAN	137	116	100	90	80
S.D.	4.7	4.4	2.3	1.6	1.4
N	5	5	4	5	5

SF=Spilled Feeder

TABLE I

GASOLINE ETBE 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 10000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
3071	134	110	96	87	81
3072	134	118	97	89	81
3073	139	120	95	85	77
3074	137	113	98	86	77
3075	139	117	97	86	79
MEAN	136	115	96	87	79
S.D.	2.6	4.0	1.0	1.6	2.1
N	5	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE I

GASOLINE ETBE 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 20000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
4081	138	115	97	89	81
4082	134	115	94	88	80
4083	138	112	94	93	82
4084	142	120	101	89	79
4085	127	105	93	83	76
MEAN	136	113	96	88	80
S.D.	5.5	5.4	3.3	3.9	2.1
N	5	5	5	5	5

TABLE I

GASOLINE ETBE 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 VI MICRO+CONTROL

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
6051	138	118	103	91	81
6052	141	125	110	100	88
6053	143	123	101	88	79
6054	142	125	103	89	80
6055	226	113	94	84	75
MEAN	158	121	102	90	80
S.D.	38.2	5.3	5.8	5.7	4.7
N	5	5	5	5	5

TABLE I

GASOLINE ETBE 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
1591	146	122	108	101	91
1592	142	123	99	93	82
1593	149	125	110	101	94
1594	143	116	96	89	84
1595	142	120	106	96	87
MEAN	144	121	104	96	88
S.D.	3.2	3.4	5.9	5.0	5.3
N	5	5	5	5	5

TABLE I

GASOLINE ETBE 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 2000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
2581	148	123	114	109	97
2582	138	111	105	102	102
2583	149	125	106	94	90
2584	139	121	98	89	80
2585	SF	115	107	98	96
MEAN	144	119	106	98	93
S.D.	5.7	5.8	5.5	7.6	8.4
N	4	5	5	5	5

SF=Spilled Feeder

TABLE I

GASOLINE ETBE 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 III 10000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
3581	136	118	94	91	86
3582	138	114	102	91	85
3583	137	121	102	96	94
3584	144	117	109	98	91
3585	148	129	131	103	102
MEAN	141	120	108	96	91
S.D.	5.1	5.8	14.1	4.9	6.9
N	5	5	5	5	5

Huntingdon Life Sciences 00-6129G
Genotoxicity Sub-Group

TABLE I

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INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP IV 20000 MG/M3

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
4591	150	117	104	94	83
4592	147	117	SF	88	87
4593	142	115	101	98	89
4594	139	117	102	101	89
4595	158	124	112	89	81
MEAN	147	118	105	94	86
S.D.	7.6	3.5	5.0	5.7	3.9
N	5	5	4	5	5

SF=Spilled Feeder

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INDIVIDUAL FEED CONSUMPTION VALUES (GRAMS/KG/DAY)

FEMALES GROUP VI MICRO+CONTROL

	WEEK OF STUDY				
ANIMAL#	0	1	2	3	4
6561	148	126	110	95	92
6562	135	118	104	94	81
6563	134	116	104	99	85
6564	144	126	108	98	86
6565	152	137	111	102	94
MEAN	143	125	108	98	88
S.D.	7.7	8.4	3.3	3.1	5.0
N	5	5	5	5	5

TABLE J

GASOLINE ETBE 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
1081	TERMINAL SACRIFICE	20-DEC-01	3	27
1082	TERMINAL SACRIFICE	20-DEC-01	3	27
1083	TERMINAL SACRIFICE	20-DEC-01	3	27
1084	TERMINAL SACRIFICE	20-DEC-01	3	27
1085	TERMINAL SACRIFICE	20-DEC-01	3	27

TABLE J

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

ANIMAL TERMINATION HISTORY

MALES GROUP II 2000 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
2071	TERMINAL SACRIFICE	20-DEC-01	3	27
2072	TERMINAL SACRIFICE	20-DEC-01	3	27
2073	TERMINAL SACRIFICE	20-DEC-01	3	27
2074	TERMINAL SACRIFICE	20-DEC-01	3	27
2075	TERMINAL SACRIFICE	20-DEC-01	3	27

TABLE J

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ANIMAL TERMINATION HISTORY

MALES GROUP III 10000 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
3071	TERMINAL SACRIFICE	20-DEC-01	3	27
3072	TERMINAL SACRIFICE	20-DEC-01	3	27
3073	TERMINAL SACRIFICE	20-DEC-01	3	27
3074	TERMINAL SACRIFICE	20-DEC-01	3	27
3075	TERMINAL SACRIFICE	20-DEC-01	3	27

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ANIMAL TERMINATION HISTORY

MALES GROUP IV 20000 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
4081	TERMINAL SACRIFICE	20-DEC-01	3	27
4082	TERMINAL SACRIFICE	20-DEC-01	3	27
4083	TERMINAL SACRIFICE	20-DEC-01	3	27
4084	TERMINAL SACRIFICE	20-DEC-01	3	27
4085	TERMINAL SACRIFICE	20-DEC-01	3	27

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ANIMAL TERMINATION HISTORY

MALES GROUP VI MICRO+CONTROL

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
6051	TERMINAL SACRIFICE	20-DEC-01	3	27
6052	TERMINAL SACRIFICE	20-DEC-01	3	27
6053	TERMINAL SACRIFICE	20-DEC-01	3	27
6054	TERMINAL SACRIFICE	20-DEC-01	3	27
6055	TERMINAL SACRIFICE	20-DEC-01	3	27

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ANIMAL TERMINATION HISTORY

FEMALES GROUP I 0 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
1591	TERMINAL SACRIFICE	20-DEC-01	3	27
1592	TERMINAL SACRIFICE	20-DEC-01	3	27
1593	TERMINAL SACRIFICE	20-DEC-01	3	27
1594	TERMINAL SACRIFICE	20-DEC-01	3	27
1595	TERMINAL SACRIFICE	20-DEC-01	3	27

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ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
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2582	TERMINAL SACRIFICE	20-DEC-01	3	27
2583	TERMINAL SACRIFICE	20-DEC-01	3	27
2584	TERMINAL SACRIFICE	20-DEC-01	3	27
2585	TERMINAL SACRIFICE	20-DEC-01	3	27

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FEMALES GROUP III 10000 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
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3582	TERMINAL SACRIFICE	20-DEC-01	3	27
3583	TERMINAL SACRIFICE	20-DEC-01	3	27
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ANIMAL TERMINATION HISTORY

FEMALES GROUP IV 20000 MG/M3

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
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4592	TERMINAL SACRIFICE	20-DEC-01	3	27
4593	TERMINAL SACRIFICE	20-DEC-01	3	27
4594	TERMINAL SACRIFICE	20-DEC-01	3	27
4595	TERMINAL SACRIFICE	20-DEC-01	3	27

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ANIMAL TERMINATION HISTORY

FEMALES GROUP VI MICRO+CONTROL

ANIMAL#	TYPE OF DEATH	DATE OF DEATH	WEEK OF STUDY	STUDY DAY
6561	TERMINAL SACRIFICE	20-DEC-01	3	27
6562	TERMINAL SACRIFICE	20-DEC-01	3	27
6563	TERMINAL SACRIFICE	20-DEC-01	3	27
6564	TERMINAL SACRIFICE	20-DEC-01	3	27
6565	TERMINAL SACRIFICE	20-DEC-01	3	27