

Study Title

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

TEST GUIDELINES: Not Applicable

AUTHOR: [REDACTED]

STUDY COMPLETED ON: September 16, 2008

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SERVICE CODE NUMBER: 730

SPONSOR: Petroleum HPV Testing Group
American Petroleum Institute (API)
1220 L Street, NW
Washington, D.C. 20005
U.S.A.

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

This study was conducted in compliance with U.S. EPA TSCA (40 CFR part 792) Good Laboratory Practice Standards, which are compatible with current OECD and MAFF (Japan) Good Laboratory Practices, except for the items documented below. None of the items listed impact the validity of the study.

- The test substance was characterized by the sponsor prior to the initiation of this study. Although the characterization was not performed under Good Laboratory Practice Standards, the accuracy of the data is considered sufficient for the purposes of this study.
- A sample of the test substance and the original containers will not be retained by the performing laboratory due to the flammability of the test substance and potential explosive hazards. Samples from the same lot in similar containers are retained by the sponsor at another location.

Applicant / Sponsor: Petroleum HPV Testing Group
American Petroleum Institute (API)
1220 L Street, NW
Washington, D.C. 20005
U.S.A.

Study Director:



Sept 16, 2008
Date

Applicant / Sponsor:



9/10/2008
Date

QUALITY ASSURANCE STATEMENT

Work Request Number: 16123
Study Code Number: 730

<i>Phase Audited</i>	<i>Audit Dates</i>	<i>Date Reported to Study Director</i>	<i>Date Reported to Management</i>
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Reported by:



12 Sep 2008
Date

CERTIFICATION

We, the undersigned, declare that this report provides an accurate evaluation of data obtained from this study.

Analytical Evaluation by:

15-Sept-2008
Date

Approved by:

12-Sept-2008
Date

Reviewed by:

15-Sep-2008
Date

Issued by Study Director:

16-Sept-2008
Date

This report was accepted by the Sponsor.

Accepted by:

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Date

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STUDY INFORMATION

Substance Tested: • Naphtha, Petroleum, Heavy Straight-Run
• 64741-41-9 (CAS Number)

Synonyms: • High Naphthenic Naphtha
• Sweet Naphtha
• Heavy Hydrocrackate

Haskell Number: 27199

Composition: The test substance contains approximately 225 volatile hydrocarbons, of which 28 are unidentified.

Purity: The purity of the mixture is 100%
(as reported by the manufacturer)

Physical Characteristics: Colorless liquid

Stability: The test substance appeared to be stable under the conditions of the study; no evidence of instability was observed.

Study Initiated/Completed: February 15, 2006 / (see report cover page)

Experimental Start/Termination: February 20, 2006 / March 8, 2006

SUMMARY

Naphtha, petroleum, heavy straight-run is a complex mixture of approximately 225 volatile, organic components. The purpose of this study was to determine the potential toxicity from repeated inhalation exposure of males and time-mated female rats to 0, 250, 1000, or 4000 ppm of naphtha, petroleum, heavy straight-run for 6 hours per day, 7 days per week, for 14-15 exposures.

Concentrations of naphtha, petroleum, heavy straight-run vapor were generated by flash evaporation of the test material. An air control chamber group was also evaluated using a similar generation apparatus; however, no test material was supplied to the vapor generator. Vapor concentrations of naphtha, petroleum, heavy straight-run were measured by gas chromatography (GC) using the area sum function and integrating all of the eluted peaks. In addition, to validate the chamber generation system, additional air samples were collected and analyzed for 12 of the larger, most representative components of the test substance using a cryogenic GC method supplied by the sponsor. Measuring these components indicates that all fractions of the test substance were adequately vaporized. Temperature, humidity, and airflow were also recorded periodically during each exposure day.

Groups of 5 time-mated Crl:CD(SD) females were exposed daily during gestation days 6-20 (day 6-20G). Groups of 5 male rats were exposed daily, for test days 1-14. During the in-life portion of the study, body weights, food consumption, and clinical signs data were collected. On day 21G, dams were euthanized and subjected to a gross external and internal examination. Uterine contents were described; all fetuses were removed and individually weighed, sexed, and examined for external alterations. Male rats were euthanized on test day 15 and similarly given an external evaluation.

The mean concentrations ($\pm$ standard error of the mean) representing the total area for the approximately 225 components contained in the test substance over the daily test periods were 250 ± 1.2 , 1000 ± 2.3 , and 4000 ± 9.0 ppm in chambers targeted at 250, 1000, and 4000 ppm. Results from the cryogenic GC analysis indicated that the components were present in the chamber atmosphere within expected concentrations.

Mortality did not occur at any exposure concentration. A test substance-related, statistically significant increase in the incidence of wet fur was observed in 4000 ppm females, and in one 4000 ppm male. In addition, in the 4000 ppm females, 1 female had red stained facial fur, one female had brown stained nose, and one female had salivation. Test substance-related clinical signs of toxicity were not observed in males or females exposed to 250 or 1000 ppm.

Adverse, test substance-related, statistically significant decreases in body weight, weight gain, food consumption, and food efficiency occurred in 4000 ppm males and females. Slight decreases in body weight and food consumption and/or food efficiency were also observed in 250 and 1000 ppm males. There were no effects on body weight, weight gain, or food consumption in 250 or 1000 ppm females.

The number of pregnant animals, and the mean number of *corpora lutea*, implantation sites, resorptions, live fetuses, dead fetuses, male fetuses, female fetuses and sex ratio were comparable across all groups.

Mean fetal body weight in the 4000 ppm group was significantly lower compared to the control value. There were no test substance-related fetal external abnormalities.

There were no test-substance-related gross morphological observations detected for any exposure concentration in adult males or maternal females.

Relative liver and kidney weights were significantly increased in 1000 and 4000 ppm males and in 4000 ppm females; relative testes weights were increased in 1000 and 4000 ppm males. There were no significant differences in absolute kidney, liver, or lung weights in males or females, or testes weights in males.

INTRODUCTION

The objective of this study was to determine exposure concentrations for a subsequent Combined Repeated Dose Toxicity Study with a Reproduction/Developmental Toxicity Screening Test, and to provide a preliminary evaluation of the potential repeated dose toxicity, maternal toxicity, and developmental toxicity of the test substance when administered by inhalation to male rats for 2 weeks and to pregnant rats from around the time of implantation to the end of gestation (G). The inhalation route of exposure was chosen because it is a potential route for human exposure.

An inhalation methods development study⁽¹⁾ was performed to validate the vapor generation and air sampling methods used for the current study. Exposure levels for the current study were selected using 4000 ppm as the highest exposure concentration that could be safely generated, along with 2 lower incremental concentrations.

EXPERIMENTAL DESIGN

A. Treatment Groups and Exposure Concentrations

Group Number	Number Per Group		Targeted Atmospheric Concentration (ppm) ^b
	Males	Females ^a	
1	5	5	0 Control
2	5	5	250 Low
3	5	5	1000 Intermediate
4	5	5	4000 High

^a Time-mated pregnant females.

^b The test substance, administered by whole-body inhalation.

B. Treatment Schedule

All exposures were conducted for 6 hours/day, 7 days/week.

Study Phase and Groups	Duration of Exposure
Males	14 days
Females	Days 6-20G

C. Study Parameters

Clinical Observations

Daily Animal Health Observations	Daily (a.m., pre-exposure)
Careful Clinical Observations	Daily (p.m., post-exposure)

Body Weights

Quarantine/Pretest	Twice
During Study	Daily

Food Consumption and Food Efficiency

During Study Daily

Necropsy

Sacrifice Schedule

Males

Test day 15

Pregnant females

Day 21G

Gross Pathology

All animals

Uterine/Fetal Examination

All females were evaluated for number of implants, resorptions, live/dead fetuses, and *corpora lutea*. A fetal external examination was also conducted.

D. Selection of Exposure Concentrations

Study concentrations were selected using the highest safe exposure concentration of 4000 ppm with 2 lower $\frac{1}{4}$ incremental levels. The maximum dose could not be set at 50% lower explosive limit (LEL) (4700 ppm) due to flammability concerns; 4000 ppm is approximately 43% of LEL. Dose ranges were determined based on data available from studies on gasoline and gasoline distillate blending streams summarized in the High Production Volume (HPV) Gasoline Blending Streams test plans and Gasoline robust summaries.⁽²⁾

E. Route of Administration

The test substance was administered by inhalation as it is a potential route of human exposure.

MATERIALS AND METHODS

A. Analytical

1. Test Substance

Chemical Name: Naphtha, petroleum, heavy straight-run

Synonyms:

- High Naphthenic Naphtha
- Sweet Naphtha
- Heavy Hydrocrackate

CAS Number: 64741-41-9 (Appendix A)

Haskell Sample Number: H-27199

Purity: The test substance is a mixture which also contains numerous volatile hydrocarbons. The purity of the mixture is 100% (as reported by manufacturer)

Color: Colorless

Form: Liquid

Supplier: EPL Archives, Inc., Sample #1203-005

Vehicle: Nitrogen (purity > 99.9%) and filtered air.

2. Sample Characterization and Stability

The sponsor provided the purity information, composition, and physical characteristics of the test substance, and the analytical methods used for the characterization.

B. Inhalation Exposure System

1. Exposure Chambers

Exposures to the test substance were conducted in NYU type 1.4-m³ chambers. The exposure chambers used for this study were constructed of stainless steel and glass, and were cubical with square-pyramidal chamber inlets and outlets with a tangential feed at the chamber inlet which promotes uniform chamber distribution of the test substance. The chamber volume was chosen so that the total body volume of the test animals did not exceed approximately 5% of the chamber volume.

2. Atmosphere Generation

(Figure 1)

Chamber atmospheres were generated by flash evaporation of the test substance in nitrogen. The liquid test substance was metered into round-bottom, flash evaporation flasks. A Harvard Apparatus model 22 Syringe Infusion Pump supplied the liquid test material for the 250 ppm chamber, and Cole-Parmer Masterflex model 7521-40 pumps supplied the liquid to the 1000 and 4000 ppm chamber evaporation flasks. The flasks were placed in Unimantle heaters that were heated to 185°C for the 0 ppm chamber, 185°C for the 250 ppm chamber, 210°C for the 1000 ppm chamber, and 250°C for the 4000 ppm chamber. Brooks model 0154E mass flow controllers supplied approximately 10 L/min of high purity nitrogen (> 99.9%) to the evaporation flasks. The resulting vapors were swept into the chambers' HEPA-filtered, conditioned air supply lines. Chamber concentrations of the test substance were controlled by varying the test substance feed rates to the evaporation flasks. The Harvard Apparatus infusion pump, Cole-Parmer Masterflex pumps, Brooks mass flow controllers, and the Unimantle heaters were controlled and monitored by a customized Camile Inhalation Toxicology Automated Data System (CITADS).

The chambers were exhausted by setting the exhaust airflow slightly higher than the incoming chamber air supply so that the exposure chambers would be under slight negative pressure with respect to the surrounding room. Each chamber air supply was set to be at least 240 L/min to achieve a minimum of 10 air changes per hour.

3. Chamber Distribution of the Test Substance

Uniform distribution of the main component of the test substance was determined during the method development study.⁽¹⁾

4. Exposure Mode

Animals were individually placed in stainless steel wire mesh modules (one/module) and exposed, whole-body, inside the exposure chamber.

C. Characterization of Chamber Atmosphere

1. Test Substance Sampling and Analysis

Naphtha, petroleum, heavy straight-run vapor in each of the test chambers was monitored approximately once an hour by drawing a sample of the chamber atmosphere through stainless steel tubing leading to a Hewlett Packard model 6890 GC equipped with a pneumatically operated gas sample valve and a flame-ionization detector (denoted subsequently as the main GC). Samples were automatically injected onto a 30-meter J & W Scientific DB-5 fused silica glass column and were chromatographed using an oven temperature ramp rate of 10°C/min from 40 to 125°C. The atmospheric concentration of the test substance was determined from a standard curve derived from vapor standards that were prepared daily. Gas standards were prepared by injecting 3 known volumes of liquid naphtha, petroleum, heavy straight-run into Tedlar[®] gas standard bags containing either 5 or 12 liters of air.

Throughout the 6-hour period, GC sample results were automatically transferred to a CITADS unit. Upon completion of the run, a Camile Inhalation Automated Reporting and Analysis System (CIRAS) collated the results of the vapor samples.

Nominal concentrations were calculated daily based on the daily total airflow in a given test chamber, the molecular weight and density of the test substance, and the volume of liquid test substance pumped into the vaporization flask according to the following equation:

$$\frac{\text{Total volume of TS (mL)} \times \text{TS density (g/mL)}}{\text{mean airflow (L/min)} \times 360 \text{ (min)}} = \text{g/L} \times \frac{24.450}{\text{MW (g/mole)}} = \text{ppm}$$

2. Environmental Monitoring

Chamber temperature was targeted at 19 - 25°C and chamber relative humidity was targeted at 50 ± 20%. The temperature and humidity were monitored continually with VWR Dial Hygrometer Thermometer Humidity meters and recorded 3 times during each exposure. The airflow was monitored continually with Omega model number FMA-604-V thermo-anemometers, and recorded 3 times during each exposure. Chamber oxygen concentration was targeted to be at least 19%. The oxygen concentrations were measured with a Biosystems model

TS = test substance
MW = molecular weight, 111.25g/mole^a
24.450 = conversion factor
TS density = test substance density, 0.749 g/mL

a Average molecular weight of the components in the test substance (supplied by the sponsor).

3100R oxygen analyzer and recorded one time during each exposure for each chamber.

3. Twelve Component Analysis

Since naphtha, petroleum, heavy straight-run is a mixture of approximately 225 components (Appendix C), 12 components were selected for further analysis in order to verify that all the components in the test substance were being delivered to the chamber. The 12 components were selected from a cross sample of the components' peak retention times. The analysis was conducted on samples collected from the 250 and 4000 ppm chambers once near the beginning of the study and once near the end of the study.

For this analysis, samples from the 250 and 4000 ppm chambers were collected in Tedlar[®] gas standard bags and were injected into a separate Hewlett Packard model 6890 *Plus* GC also equipped with a pneumatically operated gas sample valve and a flame-ionization detector (denoted subsequently as the cryogenic GC). Samples were injected onto a 100-meter Sep Sys SD-009 column and were chromatographed using a cryogenic oven with 3 different oven temperature ramp rates starting from 0°C and ending with a final oven temperature of 262°C. The total run time for one chromatographic analysis was 138 minutes.

Gas standards were prepared by injecting known volumes of the test substance into Tedlar[®] gas standard bags containing known volumes of air. The 12 components' concentrations were calculated by multiplying the percent volume values supplied by the sponsor by the standard concentration. The cryogenic GC was then calibrated for each of the 12 peaks using the individual component concentrations. The standard curve was entered, and an external standard option using a linear curve was selected. The GC Hewlett Packard Chemstation software calculated the concentration of the 12 components in the test substance in parts per million (ppm).

D. Duration of Exposure

Each group of time-mated female rats was exposed daily, 6 hours/day, during Days 6-20G. Males were exposed concurrently with females. The starting time of each exposure was defined as the time when the generation system is turned on. The ending time of each exposure was defined as the time when the generation system was turned off. After each exposure, rats were returned to their home cages.

E. Test Species

Species: Rat

Strain: Crl:CD(SD)

Sex: Males and time-mated females

Source: Charles River Laboratories, Inc
Raleigh, North Carolina

Number of Rats Requested: 25 males; 20 females

- Age at Arrival: Approximately 59 days (males) and
approximately 63 days (females) (day 2 of gestation)
- Age at Experimental
Initiation (First day of
Exposure): Approximately 65 days old (males)
Approximately 67 days old (females) (day 6 of gestation)
- Weight: Males: 237.1-255.3 g on the day after arrival
Females: 200-224 g (gestation day 0 weights, provided by the
supplier)
- Identification: Dams: The number assigned to each animal was marked on the
tail during pretest period and included on cage label.
Males: The males were assigned a pretest number and a study
identification number. The study identification number was
tattooed on the tail and included on the cage label.
- Selection Criteria: Consistently acceptable health status and extensive experience
with this strain at Haskell Laboratory. Preferred species as
recommended in the testing guidelines.

F. Animal Husbandry

Housing - Male

- All Phases: Individually in stainless steel, wire-mesh cages suspended above
cage boards; sexes on separate racks.

Housing – Female

- All Phases: Individually in stainless steel, wire-mesh cages suspended above
cage boards; sexes on separate racks.

- Climate: Temperature of 19-22°C
Relative humidity of 22%-44% (Humidity was lower (22%) than
the targeted range of 30%-70% at the 8:00 a.m. observation for
February 28, 2006; however, the humidity had returned to the
targeted range by the 3:00 p.m. observation. All other values
were within the targeted range.)

- Illumination: Artificial (fluorescent light) on an approximate 12-hour
light/dark cycle.

- Water: Tap water from United Water Delaware *ad libitum* provided by
an automatic watering system except during exposure.

- Feed: PMI[®] Nutrition International, LLC Certified Rodent LabDiet[®]
5002 (pelleted) *ad libitum* except during exposure.

G. Animal Health and Environmental Monitoring Program

As specified in the Haskell Laboratory animal health and environmental monitoring program, the following procedures are performed periodically to ensure that contaminant levels are below those that would be expected to impact the scientific integrity of the study:

Water Screening Tests: Total bacterial counts, and the presence of coliforms, lead, and other contaminants

Cage and Cage Rack Screening Tests: Analyzed for sentinel bacteria to ensure adequate sanitation by the cagewashers

Feed: Certified animal feed is used, guaranteed by the manufacturer to meet specified nutritional requirements and not to exceed stated maximum concentrations of key contaminants, including specified heavy metals, aflatoxin, chlorinated hydrocarbons, and organophosphates.

Program Administration: Laboratory animal veterinarian
Data: Maintained separately from study records

H. Quarantine and Pretest Periods

Pretest Period: 6 days for males; 5 days for females

Quarantine: 6 days for males; 5 days for females

Quarantine Release: Performed by the laboratory animal veterinarian or designee on the basis of adequate body weight gain and absence of clinical signs of disease or injury.

I. Assignment to Groups

Selection Criteria: Animals without adequate body weight gain and/or with clinical signs of disease or injury were eliminated from consideration for use in the study.

Randomization: Computerized randomization procedure designed to produce a homogeneous distribution of body weights across groups.

Disposition of Remaining Animals: Sacrificed by carbon dioxide asphyxiation.

J. In-life Observations of Females

1. Daily Animal Health Observations

Frequency: All animals – At least once daily during quarantine and pretest, and once daily thereafter. On exposure days, the observations were conducted at the time animals are placed in the exposure modules.

Scope: Cage-site examination to detect moribund or dead animals.

2. Careful Clinical Observations

Frequency: All animals – once daily after initiation of exposures. The observations were conducted upon return to the home cages on exposure days.

Scope: Acute/systemic toxicity

3. Clinical Observations During Inhalation Exposure

Frequency: All animals visible to the observer through the glass window of the chamber were observed 3 times during the exposure.

Scope: Observations through the window of the chamber for abnormal behavior or appearance.

4. Body Weight

Quarantine/pretest: All animals – twice.
Females – day 4G

Exposure Period: Males: daily
Females: daily on days 6-21G.

5. Food Consumption

Males: Daily
Females: Daily

Calculation of Food Consumption: Feeders were weighed and spillage estimated. The ending feeder weight and amount of spillage were subtracted from initial weight.

Calculation of Mean Daily Food Efficiency: From food consumption and body weight data.

K. Animal Euthanasia and Postmortem Evaluations

1. Male Rats

Rats were euthanized by carbon dioxide asphyxiation and exsanguination. The order of sacrifice for scheduled deaths was random among all treatment groups.

All male rats underwent a gross evaluation. Gross lesions were retained.

a. Organ Weights

The weight of the following organs were recorded for all male rats sacrificed by design:

lungs
liver
kidneys
testes

Relative organ weights (percent of final body weight) and group mean organ weights for weighed organs, were calculated. Final body weights, determined just prior to necropsy, were used in the assessment of organ weight changes.

2. Females

a. Control of Bias

In addition to random assignment to groups, all females were coded before scheduled euthanasia and remained coded during the collection of postmortem and fetal data.

b. Postmortem Observations of Dams

Dams were euthanized by carbon dioxide asphyxiation, and a gross external and internal examination conducted as described below.

c. Viscera

Viscera were examined grossly immediately after euthanasia on day 21G. No lesions were noted, and therefore no lesions were retained.

d. Uterine Weight

The gravid uterus of each dam was weighed. This weight was subtracted from the terminal maternal body weight to obtain the net terminal maternal body weight.

e. *Corpora Lutea*

The count for each ovary of females with viable fetuses was recorded.

f. Implantation Sites

For each female with visible implantation sites, the types of implants (live and dead fetuses, and resorptions) and their relative positions were recorded. All rats were pregnant, and therefore it was not necessary to stain any uterus with ammonium sulfide.⁽³⁾

g. Organ Weights

The weight of the following organs were recorded for all female rats sacrificed by design:

Lungs
Liver
Kidneys

Relative organ weights (percent of final body weight) and group mean organ weights for weighed organs, were calculated. Final body weights, determined just prior to necropsy, were used in the assessment of organ weight changes.

3. Fetuses

Live fetuses were euthanized by injection with sodium pentobarbital (i.p.) after the external examination was completed.

a. Number, Location, Sex, and Condition

These parameters were recorded for each fetus.

b. Fetal Weight

The body weight of each viable fetus was recorded.

c. External Alterations

The alterations detected for each live fetus were recorded.

STATISTICAL ANALYSES

Parameter	Method of Statistical Analysis		
	Preliminary Test	If Preliminary Test is Not Significant	If preliminary test is significant
Body weight Body weight change Food consumption Live fetuses Dead fetuses Resorptions Implantations Organ weights Relative organ weights	Levene's test for homogeneity ⁽⁴⁾ and Shapiro-Wilk test ⁽⁵⁾ for normality ^a	One-way analysis of variance ⁽⁶⁾ and Dunnett's test ^(7,8,9)	Kruskal-Wallis test ⁽¹⁰⁾ followed with Dunn's test ⁽¹¹⁾
Clinical observations Mortality Incidence of pregnancy Females with total resorptions Early deliveries	None	Cochran-Armitage test ^{(6)b}	
Incidence of fetal alterations	None	Exact Mann-Whitney with a Bonferroni-Holm adjustment ^(12,13)	
Fetal weight (Covariates: litter size, sex ratio) Sex ratio (Covariate: litter size)	Levene's test for homogeneity ⁽⁴⁾ and Shapiro-Wilk test ⁽⁵⁾ for normality ^c	Analysis of covariance ⁽⁶⁾ and Dunnett-Hsu ⁽¹⁴⁾	Non-parametric analysis of covariance ⁽¹⁵⁾

- a If the Shapiro-Wilk test is not significant but Levene's test is significant, a robust version of Dunnett's test was used. If the Shapiro-Wilk test was significant, the Kruskal-Wallis test was followed by Dunn's test.
- b If the incidence is not significant, but a significant lack of fit occurs, then Fisher's Exact test⁽¹⁶⁾ with a Bonferroni correction was used.
- c A normalizing, variance stabilizing transformation was used as needed.

For litter parameters, the proportion of affected fetuses per litter or the litter mean was used as the experimental unit for statistical evaluation.⁽¹⁷⁾ The level of significance selected was $p < 0.05$.

RESULTS AND DISCUSSION

ANALYTICAL

A. Test Substance Concentration

(Table 1, Figure 2, Appendices D-E)

The mean concentrations ($\pm$ standard error of the daily means) representing the total area for the approximately 225 components contained in the test substance over the 16 test periods were 250 ± 1.2 , 1000 ± 2.3 , and 4000 ± 9.0 ppm in chambers targeted at 250, 1000, and 4000 ppm, respectively (note: whenever possible, 2 significant figures were used). Overall daily mean concentrations ranged from 88%-108% for the 250 ppm chamber with the exception of the first exposure which ranged from 52%-120%. Overall daily means for the 1000 ppm chamber ranged from 91%-110%; and overall daily means for the 4000 ppm chamber ranged from 90%-110% with the exception of the second exposure which ranged from 70%-108%. The calculated nominal concentrations were generally similar to the actual measured concentrations, with a mean calculated concentration of 255, 992, and 4122 ppm for the 250, 1000, and 4000 ppm chambers, respectively. These data demonstrate that the exposure system and analyses were operating as expected.

B. Chamber Environmental Conditions

(Table 2, Appendix F)

The daily temperatures in the 0, 250, 1000, and 4000 ppm chambers during the 16 test periods ranged from 20-22°C.

The daily relative humidity in the 0, 250, 1000, and 4000 ppm chambers during the 16 test periods was 30%-46%.

The daily chamber airflows in the 0, 250, 1000, and 4000 ppm chambers during the 16 test periods ranged from 240-320 L/min which was adequate to achieve at least 10 air changes per hour.

The daily oxygen concentration in the 0, 250, 1000, and 4000 ppm chambers during the 16 test periods was 20%.

C. Twelve Component Analysis

(Table 3, Appendix G)

The concentrations of the 12 selected components indicated some small differences between the expected theoretical value and the analytically determined values. However, these differences were most likely due to the low concentration of the components which approached the lower limit for accurate quantification for a flame ionization detector. Therefore, the 12 components evaluated were present in the exposure chamber at concentrations close to their expected value and indicate that the vapor generation method performed as expected.

IN-LIFE TOXICOLOGY

A. Clinical Observations

1. Clinical Observations During Exposure

(Table 4)

No clinical signs were observed during exposure in the animals visible through the chamber windows.

2. Male Clinical Observations and Mortality

(Table 5, Appendix H)

Mortality did not occur at any exposure concentration. One of the 5 rats exposed to 4000 ppm had wet fur following the daily exposure period. Although this is a common observation in inhalation studies, since it was also observed in the 4000 ppm females, and was not observed in the control, 250, or 1000 ppm males, the observation of wet fur in one 4000 ppm male may be related to the test substance.

3. Maternal Clinical Observations and Mortality

(Table 6, Appendix I)

Mortality did not occur at any exposure concentration. A test substance-related, statistically significant increase in the incidence of wet fur was observed in 3 of five 4000 ppm females. In addition, in the 4000 ppm females, one female had red stained facial fur, one female had brown stained nose, and one female had salivation. Test substance-related clinical signs of toxicity were not observed in females exposed to 250 or 1000 ppm.

B. Body Weights and Body Weight Changes

1. Male Rats

(Tables 7-8, Appendices J-K)

Adverse, test substance-related, statistically significant decreases in body weight and weight gain occurred in 4000 ppm males. Body weight for 4000 ppm males was significantly lower for tests days 2-15, and was 13% lower compared to the control value on test day 15. Mean values for weight gain at 4000 ppm were significantly lower compared to the control value for the interval of test days 1-2, 2-3, 4-5, and 1-15, and were 55% lower compared to the control values for the interval of test days 1-15. Mean body weight values for 250 and 1000 ppm males were 8% and 9% lower than the control value on test day 15, respectively; however, these values were not statistically significant. Weight gain in 250 and 1000 ppm males was 32% and 31% lower, respectively, compared to the control values for test days 1-15. For 250 ppm males, weight gain was significantly lower only on test days 12-13, and was significantly lower for 1000 ppm males only on test days 13-14. Although a robust, dose-response relationship was not evident, the

lower body weight and weight gain for 250 and 1000 ppm males correlated with a decreased food consumption, and was considered to be test substance related.

2. Maternal Rats

(Tables 9-10, Appendices L-N)

Adverse, test substance-related, statistically significant decreases in body weight and weight gain occurred in 4000 ppm females. Body weight for 4000 ppm females was significantly lower compared to the control value on test days 12-21, and was 13% lower compared to the control value on day 21G. Weight gain for 4000 ppm females was significantly lower on gestation days 6-7, 12-13, 15-16, and was 32% lower compared to the control value for days 6-21G. Net (uterine contents excluded) maternal body weight on day 21G and net weight gain on days 6-21G at 4000 ppm were 13% and 65% lower than control, respectively.

There were no test substance-related effects or statistically significant differences on weight or weight gain in 250 or 1000 ppm females.

C. Food Consumption and Food Efficiency

1. Male Rats

(Tables 11-12, Appendix O)

Adverse, test substance-related, statistically significant decreases in food consumption and food efficiency occurred in males exposed to 4000 ppm of the test substance. Food consumption for 4000 ppm males was lower for all the daily intervals reported; differences from the control values reached statistical significance on test days 1-6, 8-9, 11-13, 1-15, and was 19% lower compared to the control value for test days 1-15. Food consumption was also significantly lower for 1000 ppm males on test days 8-9 and 11-12, and was 12% lower compared to the control value for test days 1-15. Food consumption was 7% lower for 250 ppm males for test days 1-15. Although a robust, dose-response relationship was not evident, the lower food consumption for 250 and 1000 ppm males correlated with decreased body weight and was considered to be test substance related.

Food efficiency in 4000 ppm males was significantly lower for test day 1-2 and the interval of test days 1-15. Food efficiency was also significantly lower for the interval of test days 1-15 in males exposed to 250 ppm.

2. Maternal Rats

(Tables 13-14, Appendix P)

Adverse, test substance-related, statistically significant decreases in food consumption and food efficiency occurred in 4000 ppm females. Food consumption for 4000 ppm females was lower for all the daily intervals reported for the exposure period; differences from the control values reached statistical significance on gestation days 7-8, 12-13, 13-14, 17-18, and resulted in a 16% lower overall (days 6-21G) mean food consumption compared to the control value.

There were no test substance-related effects or statistically significant differences on food consumption in 250 or 1000 ppm females.

Food efficiency for 4000 ppm females was significantly lower compared to the control value for gestation days 6-7, 12-13, and 6-21.

D. Reproductive Outcome and Litter Data

(Table 15, Appendices Q-S)

There were no test substance-related effects on the number of pregnant animals, and the mean number of *corpora lutea*, implantation sites, resorptions, live fetuses, dead fetuses, male fetuses, female fetuses, as well as the fetal sex ratio. The numbers of male and female fetuses and fetal sex ratio fluctuated slightly from a 1:1 ratio but were not statistically different from controls. There were more females than males in the 250 and 1000 ppm groups, and more males than females in the 4000 ppm group.

Mean fetal body weight in the 4000 ppm group was significantly lower compared to the control value.

E. Fetal External Examination

(Table 16, Appendix S)

There were no external alterations detected for any exposure concentration.

F. Postmortem Findings

1. Organ Weights

Male Rats

(Table 17, Appendix T)

There were no statistically significant differences in absolute kidney, liver, lung, or testes weights for any exposure concentration compared to the control values. Relative liver, kidney, and testes weights were significantly increased in 1000 and 4000 ppm males.

Female Rats

(Table 18, Appendix T)

There were no statistically significant differences in absolute kidney, liver, or lung weights for any exposure concentration compared to the control values. Relative liver and kidney weights were significantly increased in 4000 ppm females.

2. Gross Postmortem Examination

Male Rats

(Table 19, Appendix U)

There were no test-substance-related gross morphological observations detected for any exposure concentration. One male in the 250 ppm group had a dark, left kidney, with a cyst.

Female Rats

(Table 20, Appendix U)

There were no gross morphological observations detected for any exposure concentration.

CONCLUSIONS

Mortality did not occur at any exposure concentration. Adverse, test-substance related decreases in body weight, weight gain, food consumption, and food efficiency occurred in 4000 ppm males and females. Slight decreases in body weight, food consumption, and/or food efficiency were also observed in 250 and 1000 ppm males. No adverse effects were observed on reproductive parameters or fetal morphology. Fetal body weight in the 4000 ppm group was significantly lower compared to the control group value. Relative liver and kidney weights were increased in 1000 and 4000 ppm males and in 4000 ppm females. Relative testes weights were increased in 1000 and 4000 ppm males.

RECORDS AND SAMPLE STORAGE

All raw data, the protocol, amendment, and the final report will be retained in the archives of Haskell Laboratory for ten years following the issuance of the final report. After that period, arrangements will be made to either return all materials to the Sponsor or archive them longer at Haskell Laboratory.

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TABLES

TABLES

EXPLANATORY NOTES

Due to rounding differences, values in tables may be slightly different than appendices.

Abbreviations:

Chamber Concentrations of Naphtha, Petroleum, Heavy Straight-Run Chamber Environmental Conditions

n - number of samples
ppm - parts per million
S.E.M. - standard error of the mean

Summary of Observations in Rats During Exposure

NAD - no abnormalities detected

Notes:

Chamber Concentrations of Naphtha, Petroleum, Heavy Straight-Run Chamber Environmental Conditions

Values are reported to 2 significant figures.
Calculations were performed prior to rounding values.

Summary of Clinical Observations in Male Rats

Summary of Maternal Clinical Observations

Values are number of animals affected with the identified observation.

Table 1
Chamber Concentrations of Naphtha, Petroleum, Heavy Straight-Run

DESIGN CONCENTRATION (ppm)	MEASURED CONCENTRATION (ppm) ^a			
	MEAN	S.E.M.	RANGE	n
0	0	0	0	16
250	250	1.2	240 - 260	16
1000	1000	2.3	990 - 1000	16
4000	4000	9.0	3900 - 4100	16

a Values represent the mean, standard error of the mean (S.E.M.), and range of the daily mean values obtained from n exposures.

Table 2
Chamber Environmental Conditions

DESIGN CONCENTRATION (ppm)	TEMPERATURE (°C) ^a			RELATIVE HUMIDITY (%) ^a			n
	MEAN	S.E.M.	RANGE	MEAN	S.E.M.	RANGE	
0	22	0.091	21 - 22	36	0.95	31 - 44	16
250	21	0.091	20 - 21	35	0.97	30 - 45	16
1000	21	0.10	20 - 21	40	0.73	36 - 46	16
4000	21	0.12	20 - 22	35	0.84	31 - 43	16

DESIGN CONCENTRATION (ppm)	AIRFLOW (L/min) ^a			OXYGEN (%) ^a			n
	MEAN	S.E.M.	RANGE	MEAN	S.E.M.	RANGE	
0	260	1.4	250 - 270	20	0.013	20	16
250	280	4.9	250 - 320	20	0.010	20	16
1000	270	4.2	250 - 310	20	0.011	20	16
4000	270	2.2	250 - 280	20	0.006	20	16

a Values represent the mean, standard error of the mean (S.E.M.), and range of the daily mean values obtained from n exposures.

Table 3
Mean Measured Concentration of 12 Selected Components of Naphtha, Petroleum, Heavy
Straight-Run

Peak	Peak ID	250 ppm ^a	4000 ppm ^a
1	2-MethylC6+C7-Olefin	12	179
2	3-Methylhexane	10	138
3	t-1,3-DimethylcyC5	4	58
4	t-1,2-DimethylcycloC5	4	64
5	n-Heptane	18	272
6	Methylcyclohexane	17	254
7	Toluene	9	130
8	2-Methylheptane	7	112
9	n-Octane	13	197
10	Ethylcyclohexane	4	66
11	m-Xylene	4	59
12	n-Nonane	10	146

a Mean results of 2 measurements.

Table 4
Summary of Observations in Rats During Exposure

EXPOSURE	OBSERVATIONS DURING EXPOSURE			
	0 ppm	250 ppm	1000 ppm	4000 ppm
1	NAD	NAD	NAD	NAD
2	NAD	NAD	NAD	NAD
3	NAD	NAD	NAD	NAD
4	NAD	NAD	NAD	NAD
5	NAD	NAD	NAD	NAD
6	NAD	NAD	NAD	NAD
7	NAD	NAD	NAD	NAD
8	NAD	NAD	NAD	NAD
9	NAD	NAD	NAD	NAD
10	NAD	NAD	NAD	NAD
11	NAD	NAD	NAD	NAD
12	NAD	NAD	NAD	NAD
13	NAD	NAD	NAD	NAD
14	NAD	NAD	NAD	NAD
15	NAD	NAD	NAD	NAD
16	NAD	NAD	NAD	NAD

Table 5
Summary Of Clinical Observations in Male Rats

Group	1	2	3	4
Concentration (ppm)	0	250	1000	4000
AT RISK:	5	5	5	5
WET FUR + Incidence	0 (0%)	0 (0%)	0 (0%)	1 (20%)

+ = Combined Clinical Observations - Clinical Observations from different locations on an animal were combined.

Statistical Analysis: Statistical significance is indicated by the following ($p < 0.05$):

~ next to control mean indicates no analyses were performed

* Comparison to control (Fisher's Exact test) significant

Trend test (Cochran-Armitage) significant

Table 6
Summary Of Maternal Clinical Observations

Group	1	2	3	4
Concentration (ppm)	0	250	1000	4000
AT RISK:	5	5	5	5
HAIR LOSS HIND QUARTERS LEFT Incidence	0 (0%)	1 (20%)	0 (0%)	0 (0%)
SALIVATION Incidence	0 (0%)	0 (0%)	0 (0%)	1 (20%)
STAINED SKIN/FUR - BROWN, NOSE Incidence	0 (0%)	0 (0%)	0 (0%)	1 (20%)
STAINED SKIN/FUR - RED, FACE Incidence	0 (0%)	0 (0%)	0 (0%)	1 (20%)
WET FUR + Incidence	0 (0%)	0 (0%)	0 (0%)	3 (60%) #

+ = Combined Clinical Observations - Clinical Observations from different locations on an animal were combined.

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

~ next to control mean indicates no analyses were performed

* Comparison to control (Fisher's Exact test) significant

Trend test (Cochran-Armitage) significant

Table 7
Mean Body Weights (grams) of Male Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BW:DAY1	311.9 10.6 (5)	306.4 3.8 (5)	304.4 8.1 (5)	308.1 10.4 (5)
BW:DAY2	317.2 13.0 (5)	312.6 6.8 (5)	307.9 4.5 (5)	301.2* 9.4 (5)
BW:DAY3	325.0 16.5 (5)	315.7 6.8 (5)	312.5 6.4 (5)	301.0@ 11.4 (5)
BW:DAY4	331.7 15.0 (5)	321.4 10.1 (5)	322.1 4.3 (5)	302.4* 11.3 (5)
BW:DAY5	339.1 21.1 (5)	329.9 11.0 (5)	325.8 ^a 5.3 (4)	299.4@ ^a 7.9 (4)
BW:DAY6	351.3 21.0 (5)	336.9 10.6 (5)	336.6 3.8 (5)	314.6* 13.5 (5)
BW:DAY7	355.5 22.5 (5)	341.6 14.1 (5)	342.2 7.5 (5)	319.7@ 12.7 (5)
BW:DAY8	359.9 22.6 (5)	345.3 13.9 (5)	346.1 10.2 (5)	325.2@ 15.5 (5)
BW:DAY9	365.6 26.4 (5)	348.7 15.3 (5)	345.5 9.1 (5)	325.5@ 15.3 (5)
BW:DAY10	372.2 25.7 (5)	355.8 15.3 (5)	352.5 6.6 (5)	330.2* 15.8 (5)
BW:DAY11	375.7 28.0 (5)	359.1 16.8 (5)	356.9 11.2 (5)	335.0@ 14.7 (5)

Table 7
Mean Body Weights (grams) of Male Rats (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BW:DAY12	383.8 28.1 (5)	362.3 16.1 (5)	362.8 12.0 (5)	337.1 ^a 15.5 (5)
BW:DAY13	391.5 28.5 (5)	363.5 18.6 (5)	364.5 12.2 (5)	342.7* 15.3 (5)
BW:DAY14	399.0 30.7 (5)	364.8 21.8 (5)	363.5 18.3 (5)	348.5* 15.4 (5)
BW:DAY15	398.9 31.8 (5)	365.2 24.2 (5)	364.2 17.2 (5)	347.7* 16.6 (5)

Data summarized as: Mean
Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

a A weighing error occurred on test day 5, and the affected weights were not included in the mean or statistical analysis.

Table 8
Mean Body Weight Changes (grams) in Male Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BWG:DAY1-DAY2	5.2 2.5 (5)	6.3 5.0 (5)	3.5 7.7 (5)	-6.9* 4.0 (5)
BWG:DAY2-DAY3	7.8 5.3 (5)	3.1 3.8 (5)	4.6 3.1 (5)	-0.2* 6.1 (5)
BWG:DAY3-DAY4	6.7 4.4 (5)	5.7 4.0 (5)	9.6 3.4 (5)	1.4 2.9 (5)
BWG:DAY4-DAY5	7.4 6.7 (5)	8.5 2.0 (5)	4.5 2.6 (4)	-3.7 19.9 (4)
BWG:DAY5-DAY6	12.2 2.4 (5)	7.0 2.3 (5)	10.3 3.7 (4)	16.5 21.5 (4)
BWG:DAY6-DAY7	4.2 2.8 (5)	4.7 4.1 (5)	5.6 4.0 (5)	5.1 4.1 (5)
BWG:DAY7-DAY8	4.4 1.7 (5)	3.8 4.3 (5)	3.9 3.7 (5)	5.5 4.5 (5)
BWG:DAY8-DAY9	5.7 4.4 (5)	3.3 5.1 (5)	-0.6 1.8 (5)	0.3 4.1 (5)
BWG:DAY9-DAY10	6.6 4.1 (5)	7.2 2.4 (5)	7.0 4.3 (5)	4.7 4.1 (5)
BWG:DAY10-DAY11	3.5 4.5 (5)	3.3 1.7 (5)	4.4 4.9 (5)	4.8 3.4 (5)
BWG:DAY11-DAY12	8.1 2.5 (5)	3.2 4.1 (5)	5.9 5.9 (5)	2.1 4.0 (5)

Table 8
Mean Body Weight Changes (grams) in Male Rats (Continued)

Group:	1	2	3	4
Concentration (ppm)	0	250	1000	4000
BWG:DAY12-DAY13	7.7 1.7 (5)	1.2* 5.9 (5)	1.7 4.4 (5)	5.6 1.4 (5)
BWG:DAY13-DAY14	7.5 3.4 (5)	1.3 4.1 (5)	-1.0* 7.4 (5)	5.8 2.5 (5)
BWG:DAY14-DAY15	-0.1 2.3 (5)	0.4 3.2 (5)	0.8 3.9 (5)	-0.8 4.7 (5)
BWG:DAY1-DAY15	87.0 21.5 (5)	58.8 23.1 (5)	59.8 12.6 (5)	39.6* 6.6 (5)

Data summarized as: Mean
 Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 9
Mean Maternal Body Weights (grams)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BW:DAY6	247.7 10.7 (5)	246.8 9.8 (5)	244.8 10.0 (5)	244.3 12.6 (5)
BW:DAY7	248.1 10.5 (5)	249.1 7.8 (5)	246.2 11.8 (5)	232.5 6.8 (5)
BW:DAY8	254.0 11.9 (5)	257.9 8.9 (5)	253.6 9.3 (5)	239.6 7.0 (5)
BW:DAY9	257.4 14.2 (5)	262.2 7.4 (5)	261.9 11.8 (4)	241.4 7.2 (5)
BW:DAY10	270.4 13.6 (5)	273.0 11.4 (5)	273.2 11.4 (5)	248.7 8.1 (5)
BW:DAY11	275.3 12.2 (5)	279.7 7.9 (5)	280.0 11.3 (5)	254.4 8.7 (5)
BW:DAY12	283.4 12.5 (5)	283.2 10.3 (5)	288.0 11.1 (5)	262.0* 11.5 (5)
BW:DAY13	290.4 17.0 (5)	289.1 8.8 (5)	292.3 13.5 (5)	254.4@ 15.2 (5)
BW:DAY14	297.0 16.7 (5)	298.9 6.9 (5)	299.5 15.8 (5)	263.3@ 7.3 (5)
BW:DAY15	305.2 15.8 (5)	304.0 8.1 (5)	306.0 14.8 (5)	272.5@ 8.1 (5)
BW:DAY16	318.4 15.5 (5)	314.8 7.5 (5)	320.3 14.1 (5)	280.3* 8.5 (5)

Table 9
Mean Maternal Body Weights (grams) (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BW:DAY17	331.1 13.6 (5)	326.9 6.2 (5)	334.0 14.7 (5)	291.1* 9.6 (5)
BW:DAY18	348.2 15.7 (5)	344.3 7.5 (5)	350.4 12.3 (5)	307.1* 11.3 (5)
BW:DAY19	361.4 16.4 (5)	358.3 7.7 (5)	364.9 14.6 (5)	318.5* 14.3 (5)
BW:DAY20	376.6 15.5 (5)	374.6 6.3 (5)	378.8 19.2 (5)	332.4* 15.8 (5)
BW:DAY21	398.5 20.3 (5)	392.5 4.5 (5)	400.5 15.8 (5)	347.0* 13.8 (5)
C_BW:DAY 21	302.5 15.6 (5)	295.0 6.2 (5)	300.7 13.1 (5)	263.5* 11.1 (5)

Data summarized as: Mean
 Standard Deviation (n)

C_BW:Day21 = Net body weight on day 21 = Terminal body weight minus the gravid uterus weight

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 10
Mean Maternal Body Weight Changes (grams)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BWG:DAY6-DAY7	0.4 3.1 (5)	2.3 2.6 (5)	1.4 5.1 (5)	-11.8@ 9.8 (5)
BWG:DAY7-DAY8	5.9 5.0 (5)	8.8 2.4 (5)	7.5 3.7 (5)	7.1 4.6 (5)
BWG:DAY8-DAY9	3.3 4.4 (5)	4.3 3.8 (5)	4.8 10.3 (4)	1.8 4.6 (5)
BWG:DAY9-DAY10	13.0 2.5 (5)	10.8 6.7 (5)	15.8 9.4 (4)	7.3 2.7 (5)
BWG:DAY10-DAY11	4.9 4.5 (5)	6.7 6.1 (5)	6.9 1.1 (5)	5.7 2.6 (5)
BWG:DAY11-DAY12	8.2 6.3 (5)	3.6 3.8 (5)	8.0 3.3 (5)	7.5 5.1 (5)
BWG:DAY12-DAY13	7.0 5.1 (5)	5.9 2.7 (5)	4.3 4.8 (5)	-7.6* 12.8 (5)
BWG:DAY13-DAY14	6.6 3.4 (5)	9.8 3.4 (5)	7.2 4.0 (5)	8.9 12.4 (5)
BWG:DAY14-DAY15	8.1 2.9 (5)	5.1 1.3 (5)	6.4 5.0 (5)	9.1 2.0 (5)
BWG:DAY15-DAY16	13.2 5.4 (5)	10.9 2.2 (5)	14.3 2.4 (5)	7.8@ 2.9 (5)
BWG:DAY16-DAY17	12.8 4.1 (5)	12.1 3.0 (5)	13.8 3.9 (5)	10.8 1.4 (5)

Table 10
Mean Maternal Body Weight Changes (Grams) (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
BWG:DAY17-DAY18	17.1 4.6 (5)	17.4 1.3 (5)	16.4 3.7 (5)	16.0 3.3 (5)
BWG:DAY18-DAY19	13.2 2.7 (5)	14.0 4.3 (5)	14.4 2.6 (5)	11.4 3.5 (5)
BWG:DAY19-DAY20	15.1 5.2 (5)	16.3 4.2 (5)	14.0 5.6 (5)	13.9 2.9 (5)
BWG:DAY20-DAY21	22.0 8.8 (5)	18.0 3.8 (5)	21.7 3.9 (5)	14.6 4.0 (5)
BWG:DAY6-DAY21	150.8 15.5 (5)	145.7 10.0 (5)	155.8 7.5 (5)	102.7* 10.4 (5)
C_BWG:DAY 21	54.7 13.8 (5)	48.2 7.6 (5)	55.9 6.4 (5)	19.2* 9.6 (5)

Data summarized as: Mean
Standard Deviation (n)

C_BWG:Day21 = Net body weight gain on days 6-21 = Body weight change on days 6-21 minus the gravid uterus weight.

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 11
Mean Food Consumption (grams/day) by Male Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FC:DAY1-DAY2	28.4 3.0 (5)	27.8 3.6 (5)	26.1 2.6 (5)	21.0* 2.3 (5)
FC:DAY2-DAY3	32.6 4.8 (5)	28.5 3.2 (5)	27.8 2.2 (5)	22.7* 4.6 (5)
FC:DAY3-DAY4	30.8 3.7 (5)	29.2 2.8 (5)	26.8 3.8 (5)	23.3 ⁰ 3.7 (5)
FC:DAY4-DAY5	32.0 6.0 (5)	31.8 2.8 (5)	27.5 2.0 (5)	23.9* 2.3 (5)
FC:DAY5-DAY6	33.0 3.3 (5)	30.4 3.1 (5)	29.1 2.0 (5)	27.0* 3.0 (5)
FC:DAY6-DAY7	28.7 4.6 (5)	28.9 2.0 (5)	27.9 3.1 (5)	26.7 2.1 (5)
FC:DAY7-DAY8	31.5 3.5 (5)	31.7 3.5 (5)	29.0 2.5 (5)	26.6 2.3 (5)
FC:DAY8-DAY9	33.3 4.2 (5)	30.2 2.1 (5)	27.5* 1.8 (5)	27.5* 1.3 (5)
FC:DAY9-DAY10	29.7 3.9 (5)	30.5 2.2 (5)	27.0 3.8 (5)	24.2 3.4 (5)
FC:DAY10-DAY11	30.6 4.9 (5)	28.2 2.6 (5)	27.9 2.9 (5)	26.9 2.1 (5)
FC:DAY11-DAY12	32.6 3.7 (5)	29.3 1.5 (5)	29.0* 1.5 (5)	25.8* 0.6 (5)

Table 11
Mean Food Consumption (grams/day) by Male Rats (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FC:DAY12-DAY13	31.3 3.0 (5)	27.2 2.4 (5)	27.2 1.7 (5)	25.8* 3.0 (5)
FC:DAY13-DAY14	30.8 3.6 (5)	24.3 8.7 (5)	24.2 5.5 (5)	26.6 2.0 (5)
FC:DAY14-DAY15	31.1 4.2 (5)	26.2 4.0 (5)	27.4 3.0 (5)	27.0 2.5 (5)
FC:DAY1-DAY15	31.2 3.5 (5)	28.9 2.3 (5)	27.5 1.5 (5)	25.4* 1.5 (5)

Data summarized as: Mean
 Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 12
Mean Food Efficiency (grams weight gain/grams food consumed) by Male Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FE:DAY1-DAY2	0.180 0.071 (5)	0.224 0.169 (5)	0.118 0.272 (5)	-0.345* 0.214 (5)
FE:DAY2-DAY3	0.226 0.131 (5)	0.104 0.133 (5)	0.166 0.109 (5)	-0.058 0.340 (5)
FE:DAY3-DAY4	0.213 0.125 (5)	0.185 0.125 (5)	0.369 0.146 (5)	0.053 0.111 (5)
FE:DAY4-DAY5	0.211 0.150 (5)	0.266 0.053 (5)	-0.165 0.091 (4)	-0.121 0.858 (4)
FE:DAY5-DAY6	0.369 0.061 (5)	0.226 0.063 (5)	0.346 0.097 (4)	0.600 0.820 (4)
FE:DAY6-DAY7	0.145 0.090 (5)	0.157 0.128 (5)	0.192 0.117 (5)	0.189 0.155 (5)
FE:DAY7-DAY8	0.140 0.055 (5)	0.110 0.118 (5)	0.132 0.124 (5)	0.196 0.156 (5)
FE:DAY8-DAY9	0.162 0.109 (5)	0.105 0.171 (5)	-0.020 0.063 (5)	0.011 0.148 (5)
FE:DAY9-DAY10	0.217 0.130 (5)	0.238 0.090 (5)	0.250 0.114 (5)	0.182 0.144 (5)
FE:DAY10-DAY11	0.104 0.135 (5)	0.113 0.049 (5)	0.145 0.163 (5)	0.172 0.113 (5)
FE:DAY11-DAY12	0.247 0.071 (5)	0.105 0.136 (5)	0.202 0.193 (5)	0.078 0.154 (5)

Table 12
Mean Food Efficiency (grams weight gain/grams food consumed) by Male Rats (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FE:DAY12-DAY13	0.248 0.053 (5)	0.033 0.232 (5)	0.057 0.167 (5)	0.216 0.034 (5)
FE:DAY13-DAY14	0.237 0.096 (5)	0.008 0.183 (5)	-0.114 0.396 (5)	0.220 0.091 (5)
FE:DAY14-DAY15	-0.005 0.072 (5)	-0.001 0.141 (5)	0.031 0.140 (5)	-0.041 0.184 (5)
FE:DAY1-DAY15	0.197 0.026 (5)	0.143* 0.047 (5)	0.155 0.026 (5)	0.111* 0.016 (5)

Data summarized as: Mean
Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 13
Mean Maternal Food Consumption (grams/day)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FC:DAY6-DAY7	23.1 3.2 (5)	25.5 1.8 (5)	23.7 3.2 (5)	13.6 10.7 (5)
FC:DAY7-DAY8	24.3 2.1 (5)	26.8 2.1 (5)	26.3 2.4 (5)	19.5* 2.8 (5)
FC:DAY8-DAY9	24.3 4.2 (5)	26.9 2.3 (5)	29.4 2.5 (5)	20.4 3.7 (5)
FC:DAY9-DAY10	27.7 2.5 (5)	28.4 4.1 (5)	31.8 3.8 (5)	25.4 4.6 (5)
FC:DAY10-DAY11	25.1 2.4 (5)	28.8 4.2 (5)	29.1 2.6 (5)	22.3 3.5 (5)
FC:DAY11-DAY12	29.4 2.6 (5)	28.4 2.6 (5)	31.5 3.3 (5)	26.9 3.3 (5)
FC:DAY12-DAY13	30.0 4.7 (5)	31.5 1.6 (5)	32.2 3.1 (5)	18.8* 9.1 (5)
FC:DAY13-DAY14	27.7 4.6 (5)	28.9 1.9 (5)	29.2 3.5 (5)	21.8* 2.8 (5)
FC:DAY14-DAY15	28.4 2.1 (5)	28.6 2.2 (5)	29.6 3.7 (5)	25.6 1.8 (5)
FC:DAY15-DAY16	32.3 3.6 (5)	32.1 2.5 (5)	33.6 2.1 (5)	27.9 2.8 (5)
FC:DAY16-DAY17	30.7 1.0 (5)	30.8 3.5 (5)	33.5 4.4 (5)	28.7 2.2 (5)

Table 13
Mean Maternal Food Consumption (grams/day) (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FC:DAY17-DAY18	31.8 3.1 (5)	32.5 2.2 (5)	31.4 1.4 (5)	27.9* 1.9 (5)
FC:DAY18-DAY19	31.1 1.8 (5)	31.7 3.4 (5)	33.1 3.9 (5)	27.8 3.0 (5)
FC:DAY19-DAY20	29.1 2.3 (5)	31.7 2.1 (5)	31.0 3.6 (5)	27.0 2.6 (5)
FC:DAY20-DAY21	29.7 3.9 (5)	27.1 2.3 (5)	31.0 3.8 (5)	25.1 1.8 (5)
FC:DAY6-DAY21	28.3 2.2 (5)	29.3 1.6 (5)	30.4 2.0 (5)	23.9* 1.2 (5)

Data summarized as: Mean
Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

- ^ Cochran-Armitage test for trend
- * Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant
- @ Nonparametric comparison to control (Dunn's) significant
- # Trend test (Jonckheere-Terpstra) significant
- ~ next to control mean indicates no analyses were performed

Table 14
Mean Maternal Food Efficiency (grams weight gain/grams food consumed)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FE:DAY6-DAY7	0.004 0.147 (5)	0.089 0.103 (5)	0.040 0.200 (5)	-4.968@ 7.684 (5)
FE:DAY7-DAY8	0.238 0.192 (5)	0.331 0.095 (5)	0.286 0.155 (5)	0.386 0.302 (5)
FE:DAY8-DAY9	0.119 0.155 (5)	0.153 0.142 (5)	0.156 0.338 (4)	0.066 0.236 (5)
FE:DAY9-DAY10	0.474 0.100 (5)	0.367 0.195 (5)	0.512 0.318 (4)	0.289 0.099 (5)
FE:DAY10-DAY11	0.188 0.172 (5)	0.219 0.203 (5)	0.237 0.040 (5)	0.250 0.097 (5)
FE:DAY11-DAY12	0.272 0.216 (5)	0.122 0.123 (5)	0.251 0.094 (5)	0.269 0.151 (5)
FE:DAY12-DAY13	0.212 0.164 (5)	0.185 0.082 (5)	0.125 0.135 (5)	-1.052@ 1.800 (5)
FE:DAY13-DAY14	0.242 0.134 (5)	0.337 0.112 (5)	0.240 0.109 (5)	0.365 0.458 (5)
FE:DAY14-DAY15	0.285 0.088 (5)	0.180 0.050 (5)	0.210 0.163 (5)	0.357 0.066 (5)
FE:DAY15-DAY16	0.401 0.159 (5)	0.336 0.045 (5)	0.426 0.073 (5)	0.281 0.109 (5)
FE:DAY16-DAY17	0.416 0.134 (5)	0.391 0.078 (5)	0.407 0.083 (5)	0.377 0.044 (5)
FE:DAY17-DAY18	0.532 0.100 (5)	0.537 0.051 (5)	0.524 0.125 (5)	0.574 0.109 (5)

Table 14
Mean Maternal Food Efficiency (grams weight gain/grams food consumed) (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FE:DAY18-DAY19	0.424 0.084 (5)	0.434 0.094 (5)	0.433 0.036 (5)	0.403 0.088 (5)
FE:DAY19-DAY20	0.516 0.164 (5)	0.513 0.124 (5)	0.440 0.160 (5)	0.514 0.099 (5)
FE:DAY20-DAY21	0.724 0.208 (5)	0.659 0.098 (5)	0.720 0.213 (5)	0.587 0.167 (5)
FE:DAY6-DAY21	0.355 0.025 (5)	0.332 0.025 (5)	0.342 0.013 (5)	0.286* 0.027 (5)

Data summarized as: Mean
Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 15
Reproductive Outcome

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
Number of animals in group	5	5	5	5
Not Pregnant (%)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Died/Killed	0	0	0	0
Survived to scheduled kill	0	0	0	0
Pregnant (%)	5 (100.0)	5 (100.0)	5 (100.0)	5 (100.0)
Died/Killed/Early Delivery	0	0	0	0
with total resorption	0	0	0	0
with live fetus at scheduled kill	5	5	5	5
<i>Corpora Lutea</i>	17.8 2.6 (5)	18.0 4.7 (5)	15.2 4.0 (5)	16.2 3.3 (5)
Implants	12.2 1.3 (5)	12.8 1.5 (5)	13.0 1.2 (5)	12.0 1.6 (5)
Total Resorptions	0.00 0.00 (5)	0.00 0.00 (5)	0.20 0.45 (5)	0.00 0.00 (5)
Early Resorptions ^a	0.00 0.00 (5)	0.00 0.00 (5)	0.20 0.45 (5)	0.00 0.00 (5)
Late Resorptions ^b	0.00~	0.00	0.00	0.00
Dead Fetuses	0.0~	0.0	0.0	0.0
Live Fetuses	12.2 1.3 (5)	12.8 1.5 (5)	12.8 0.8 (5)	12.0 1.6 (5)
Male Fetuses	6.0 1.6 (5)	4.8 1.9 (5)	5.8 1.8 (5)	7.4 1.1 (5)
Female Fetuses	6.2 1.9 (5)	8.0 2.5 (5)	7.0 2.5 (5)	4.6 0.5 (5)

Table 15
Reproductive Outcome (Continued)

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
Fetal Weight	5.74 0.15 (5)	5.58 0.34 (5)	5.70 0.31 (5)	5.30! 0.22 (5)
Male Weight	5.90 0.12 (5)	5.58 0.42 (5)	5.86 0.30 (5)	5.41 0.25 (5)
Female Weight	5.58 0.21 (5)	5.57 0.30 (5)	5.57 0.34 (5)	5.10 0.22 (5)
Sex Ratio	0.50 0.15 (5)	0.38 0.15 (5)	0.46 0.16 (5)	0.62 0.03 (5)

Data summarized as: Mean
Standard

Deviation (n)

Sex Ratio = Number male fetuses/total number fetuses per litter.

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

! Analysis of Covariance and Dunnett-Hsu

~ next to control mean indicates no analyses were performed

Statistical analyses are only conducted on the total mean fetal weight; the means for males and females are presented for information only.

Note: The incidence of pregnancy, maternal mortality, the total resorptions, and early deliveries were statistically analyzed using the Cochran-Armitage test. Live fetuses, dead fetuses, resorptions, and implantations were analyzed by One-Way Analysis of Variance and Dunnett's test. Fetal weight and sex ratio were analyzed using Analysis of Covariance and Dunnett-Hsu.

a early resorption = no visible fetal structures

b late resorption = identifiable structures (i.e., digital rays)

Table 16
Incidence of Fetal External Observations

Group	1	2	3	4
Concentration (ppm)	0	250	1000	4000
Total number of fetuses examined	61	64	64	60
Total number of litters examined	5	5	5	5
External defects				
Number of fetuses examined	61	64	64	60
Number of fetuses affected	0	0	0	0

Table 17
Mean Final Body And Organ Weights From Male Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FINAL BODY WEIGHT	398.92 31.76 (5)	365.16 24.21 (5)	364.24 17.19 (5)	347.72* 16.61 (5)
KIDNEYS	3.42 0.13 (5)	3.47 0.22 (5)	3.58 0.34 (5)	3.58 0.14 (5)
KIDNEYS/ FINAL BODY * 100	0.86 0.06 (5)	0.95 0.07 (5)	0.98* 0.08 (5)	1.03* 0.05 (5)
LIVER	17.12 2.69 (5)	16.39 1.89 (5)	17.92 1.28 (5)	19.09 1.22 (5)
LIVER/ FINAL BODY * 100	4.28 0.44 (5)	4.48 0.29 (5)	4.91* 0.15 (5)	5.49* 0.15 (5)
LUNGS	1.92 0.17 (5)	1.80 0.19 (5)	1.82 0.14 (5)	1.76 0.12 (5)
LUNGS/ FINAL BODY * 100	0.48 0.01 (5)	0.49 0.04 (5)	0.50 0.02 (5)	0.51 0.02 (5)

Table 17
Mean Final Body And Organ Weights From Male Rats (Continued)

Group:	1	2	3	4
Concentration (ppm)	0	250	1000	4000
TESTES	3.35 0.25 (5)	3.33 0.29 (5)	3.45 0.20 (5)	3.54 0.21 (5)
TESTES/ FINAL BODY * 100	0.84 0.02 (5)	0.91 0.09 (5)	0.95@ 0.03 (5)	1.02@ 0.07 (5)

Data summarized as: Mean
Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

- ^ Cochran-Armitage test for trend
- * Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant
- @ Nonparametric comparison to control (Dunn's) significant
- # Trend test (Jonckheere-Terpstra) significant
- ~ next to control mean indicates no analyses were performed

Table 18
Mean Final Body And Organ Weights From Female Rats

Group: Concentration (ppm)	1 0	2 250	3 1000	4 4000
FINAL BODY WEIGHT	398.54 20.26 (5)	392.54 4.48 (5)	400.54 15.76 (5)	346.98* 13.76 (5)
KIDNEYS	2.17 0.19 (5)	2.20 0.09 (5)	2.10 0.17 (5)	2.07 0.09 (5)
KIDNEYS/ FINAL BODY * 100	0.54 0.02 (5)	0.56 0.02 (5)	0.52 0.04 (5)	0.60* 0.02 (5)
LIVER	15.92 1.98 (5)	14.84 1.18 (5)	15.85 1.02 (5)	17.14 1.49 (5)
LIVER/ FINAL BODY * 100	3.99 0.39 (5)	3.78 0.32 (5)	3.96 0.21 (5)	4.94* 0.30 (5)
LUNGS	1.30 0.14 (5)	1.40 0.13 (5)	1.40 0.18 (5)	1.25 0.11 (5)
LUNGS/ FINAL BODY * 100	0.33 0.03 (5)	0.36 0.03 (5)	0.35 0.04 (5)	0.36 0.03 (5)

Data summarized as: Mean
 Standard Deviation (n)

Statistical Analysis: Statistical significance is indicated by the following (p < 0.05):

^ Cochran-Armitage test for trend

* Parametric comparison to control (Dunnett/Tamhane-Dunnett) significant

@ Nonparametric comparison to control (Dunn's) significant

Trend test (Jonckheere-Terpstra) significant

~ next to control mean indicates no analyses were performed

Table 19
Summary of Gross Morphological Observations in Male Rats

Group:	1	2	3	4
Concentration (ppm)	0	250	1000	4000
At Risk:	5	5	5	5
Cyst, dark red, left kidney	0	1	0	0

Table 20
Summary of Gross Morphological Observations in Female Rats

Group:	1	2	3	4
Concentration (ppm)	0	250	1000	4000
At Risk:	5	5	5	5
No Abnormality Detected	5	5	5	5

FIGURES

Figure 1
Schematic of Exposure System

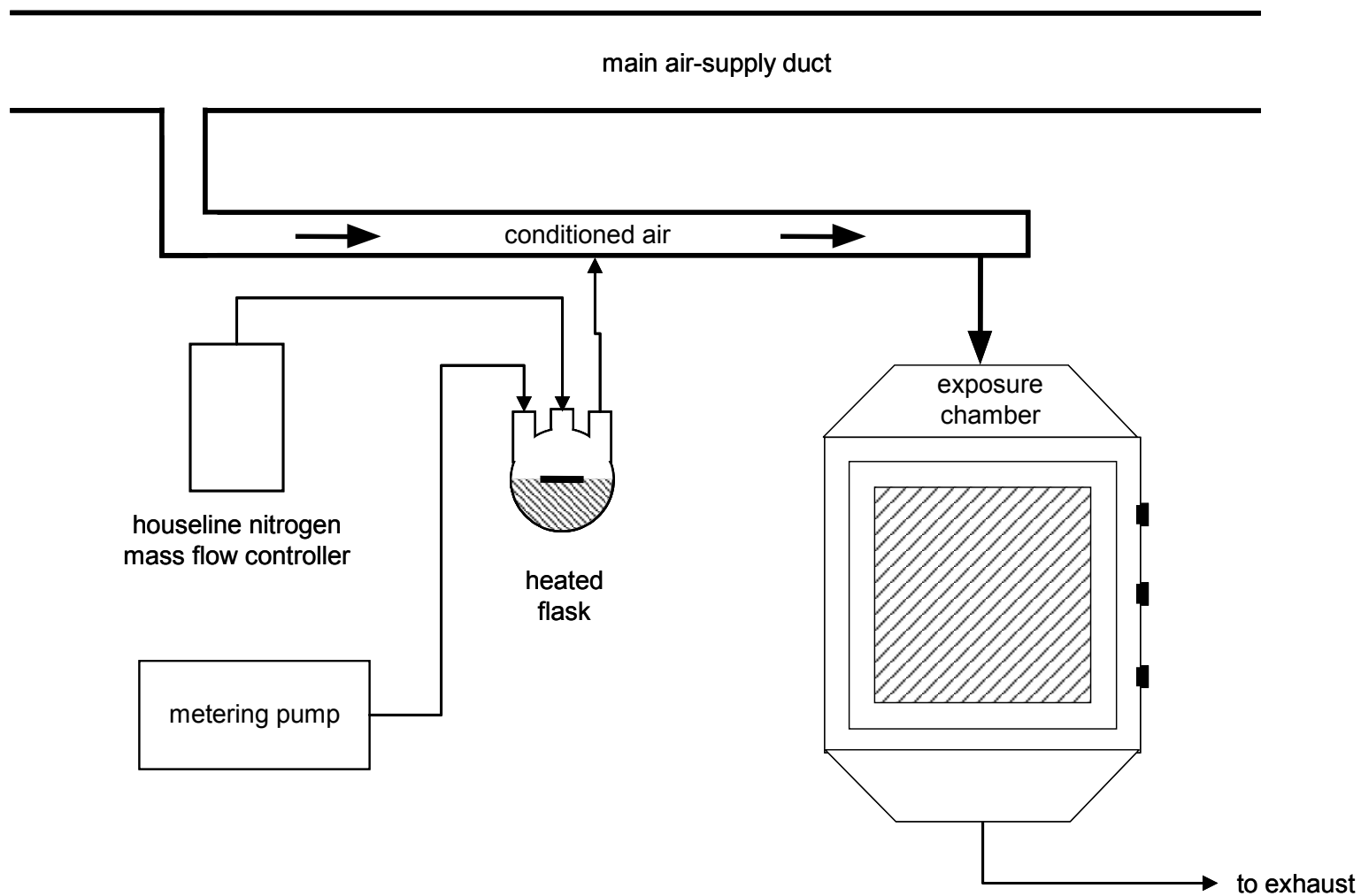
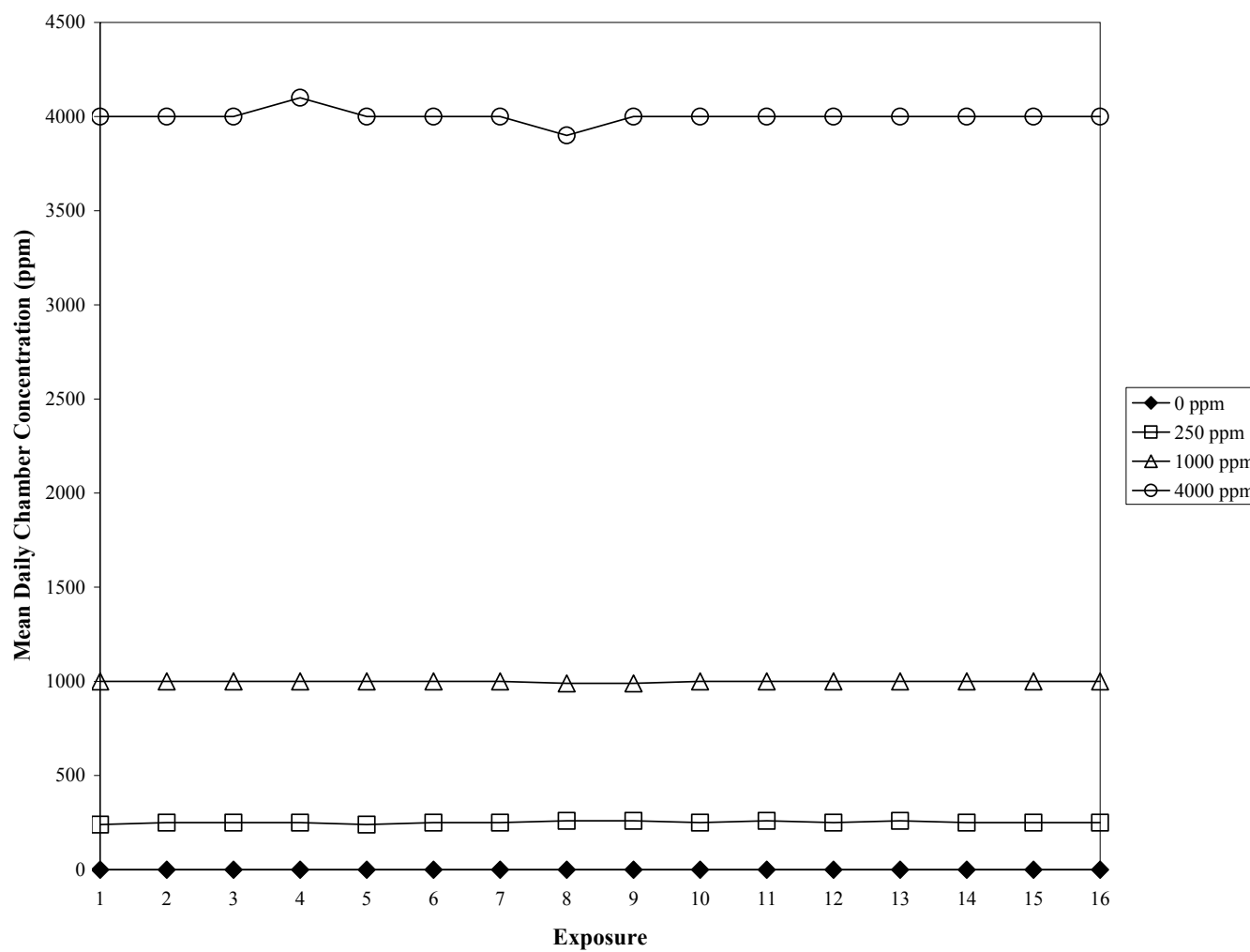


Figure 2
Mean Daily Chamber Concentrations



APPENDICES

Appendix A
Sample Characterization of High Naphthenic Naphtha:
Chemical Abstract Number Designation

Sample Characterization of High Naphthenic Naphtha: Chemical Abstract Number Designation

The test material used in studies to characterize mammalian toxicity and biodegradation of hydrocarbons in the Naphthenic (cycloparaffin) blending streams category of the HPV Gasoline Blending Stream Test Plan is a high naphthenic naphtha containing approximately 30% naphthenes. Results of studies with this test material can be used for read-across purposes for all CAS numbers identifying high naphthenic gasoline blending streams containing 19 to 30% or more naphthenic components.

This high naphthenic naphtha is derived from hydrogenation and hydrocracking process steps with removal of nitrogen and sulfur (sweetening) that convert low grade gas oils to higher quality components for direct blending of gasoline. Due to the multiple steps in generating this test material, the supplying refinery identified the sample under the broad CAS #64741-41-9, with the Chemical Abstract name of Naphtha, petroleum, heavy straight run, a CAS number which encompasses the more process-specific designations sweet naphtha and heavy crackate. The refinery further indicated that the sample underwent the hydrocracking HUX process that also makes applicable the more narrowly defined designation heavy hydrocrackate. Finally, the CAS #64741-78-2, with the Chemical Abstract name of Naphtha, petroleum, heavy hydrocracked can and has been used to identify this test material and is descriptive of the hydrocracking step employed.

This test sample identified as CAS #64741-41-9 for chain of custody purposes was collected as a single lot from one refinery and was chemically characterized prior to shipping in 3 drums to the sample repository. Contents of each drum were further analyzed to verify compositional uniformity between drums and distributed to the contract laboratories for testing. CAS #64741-41-9 and the name Naphtha, petroleum, heavy straight run will therefore be used officially to designate the test material.

Appendix B
Protocol and Protocol Amendments

DuPont-18330

Highly Naphthenic Naphtha:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

Work Request Number 16123

Service Code 730

Protocol

Performing Laboratory: E.I. du Pont de Nemours and Company
HaskellSM Laboratory for Health and Environmental Sciences
P.O. Box 50
Newark, Delaware 19714
U.S.A.

Haskell Animal Welfare
Committee Number: DGRT 187-P

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Highly Naphthenic Naptha:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

OBJECTIVE

The objective of this study is to determine exposure concentrations for a subsequent Combined Repeated Dose Toxicity Study with a Reproduction/Developmental Toxicity Screening Test, and to provide a preliminary evaluation of the potential repeated dose toxicity, maternal toxicity, and developmental toxicity of the test substance when administered by inhalation to male rats for 2 weeks and to pregnant rats from around the time of implantation to the end of gestation (G). The inhalation route of exposure was chosen because it is a potential route for human exposure.

SPONSOR

Sponsor: Petroleum HPV Testing Group
American Petroleum Institute (API)
1220 L. Street, NW
Washington, DC 20005
U.S.A.
Attention: Thomas M. Gray, M.S., D.A.B.T.®

Sponsor Approval: Date contract is signed

REGULATORY COMPLIANCE AND TEST GUIDELINES

This study will be conducted in compliance with the following good laboratory practice(s), which are compatible with current OECD and MAFF (Japan) Good Laboratory Practices:

- U. S. EPA TSCA (40 CFR Part 792) Good Laboratory Practice Standards, except for the items documented below. None of the items listed impact the validity of the study.
- A sample of the test substance and the original containers will not be retained by the performing laboratory due to the flammability of the test substance and potential explosive hazards.
- The test substance was characterized by the sponsor, however, the analyses did not meet all GLP specifications.

Highly Naphthenic Naptha:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

EXPERIMENTAL DESIGN

A. Treatment Groups and Exposure Concentrations

Group Number	Number Per Group		Targeted Atmospheric Concentration (ppm) ^b	
	Males	Females ^a		
1	5	5	0	Control
2	5	5	250	Low
3	5	5	1000	Intermediate
4	5	5	4000	High

a Time-mated pregnant females.

b The test substance, administered by whole-body inhalation.

B. Treatment Schedule

All exposures will be 6 hours/day, 7 days/week.

Study Phase and Groups	Duration of Exposure
Males	Approximately 14 days
Females	Days 6-20G

C. Study Parameters

Clinical Observations

Daily Animal Health Observations Daily (a.m., pre-exposure)
Careful Clinical Observations Daily (p.m., post-exposure)

Body Weights

Quarantine/Pretest At least twice
During Study Daily

Food Consumption and Food Efficiency

During Study Daily

Necropsy

Sacrifice Schedule

Males After approximately 14 days of exposure
Pregnant females Day 21G

Gross Pathology

All animals

Uterine/Fetal Examination

All females will be evaluated for number of implants, resorption, live/dead fetuses, and *corpora lutea*.
An external fetal examination will be conducted.

D. Selection of Exposure Concentrations

Study concentrations were selected using the highest safe exposure concentration of 4000 ppm with 2 lower ¼ incremental levels. The maximum dose could not be set at 50% lower explosive limit (LEL) (4700 ppm) due to flammability concerns; 4000 ppm is approximately 43% of LEL. Dose ranges were determined based on data available from studies on gasoline and gasoline

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distillate blending streams summarized in the high production volume (HPV) Gasoline Blending Streams test plans and Gasoline robust summaries.⁽¹⁾

F. Route of Administration

The test substance will be administered by inhalation as it is a potential route of exposure.

MATERIALS AND METHODS

A. Test Substance

Chemical Name: Sweet Naphtha
Other Name Used in this Protocol: Highly Naphthenic Naptha
CAS Number: 64741-41-9
Haskell Sample Number: H-27199
Purity: The test substance is a mixture which also contains numerous volatile hydrocarbons. The purity of the mixture is 100% (based on manufacturer)
Color: Colorless
Form: Liquid
Supplier: EPL Archives, Inc., Sample #1203-005
Vehicle: Nitrogen (purity > 99.9%)
Filtered air.

1. Sample Characterization and Stability

The sponsor will provide the purity information for the test substance. In addition, the sponsor will provide the analytical conditions that were used for the characterization.

B. Inhalation Exposure System

1. Exposure Chambers

Exposures to the test substance will be conducted in NYU type 1.4-m³ chambers. The exposure chambers to be used for this study are constructed of stainless steel and glass, and are cubical with square-pyramidal chamber inlets and outlets with a tangential feed at the chamber inlet which promotes uniform chamber distribution of the test substance. The chamber volume has been chosen so that the total body volume of the test animals is not expected to exceed approximately 5% of the chamber volume.

2. Atmosphere Generation

The target exposure concentrations are 0, 250, 1000, and 4000 ppm, with a range of $\pm 10\%$ of the target concentration.

The test substance will be vaporized by flash evaporation in a heated glass flask under flowing nitrogen. The resulting vapor will be mixed with conditioned, filtered air leading to the

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inhalation chambers. The concentration of test substance in each test chamber will be adjusted by varying the amount of the test substance delivered to each flask and/or by varying the amount of filtered air. Test atmospheres will be generated dynamically using airflows needed to achieve at least 10 air changes per hour in the exposure chamber.

All components of the vapor generation systems will be fabricated from stainless steel, glass, Neoprene[®] or Teflon[®]. The specific equipment used for atmosphere generation will be determined during the method development study.

3. Chamber Distribution of the Test Substance

Uniform distribution of the main component of the test substance was determined during the method development study.⁽²⁾

4. Exposure Mode

Animals will be individually placed in stainless steel wire mesh modules (one/module) and exposed, whole-body, inside the exposure chamber.

C. Characterization of Chamber Atmosphere

1. Test Substance Sampling and Analysis

The atmospheric concentration of the test substance will be determined at least once per hour by gas chromatography. Known volumes of chamber atmosphere will be drawn from the breathing zone of the animals and will be directly injected into a Hewlett Packard gas chromatograph equipped with a flame-ionization detector. Gas standards (ordinarily 3 working standards of different concentrations spanning the range of test substance concentrations) will be prepared prior to each exposure by the quantitative dilution of the test substance in known amounts of air. The samples collected from the chambers will be compared to the standard curve resulting from analyses of the gas standards. The control chamber will also be sampled at least twice during the 6-hour exposure period. More or less frequent samples may be taken at the discretion of the Study Director. In addition, nominal chamber concentrations will be calculated from the chamber air flow and the amount of test substance metered into each chamber.

Since the test substance is a mixture containing approximately 225 individual substances, 12 components of the mixture will be selected for further analysis in order to verify that the test substance remains stable over the course of the study. This analysis will be conducted by cryogenic gas chromatography, once near the beginning and again near the end of the exposures, using samples collected from the 250 and 4000 ppm chambers.

Details of the analytical method(s) used will be documented in the study records.

2. Environmental Monitoring

Chamber airflow will be set to achieve at least 10 air changes per hour and will be monitored continually with thermoanemometers. Chamber temperature and relative humidity will be targeted at 19-25°C and 50 ± 20%, respectively, and will be measured with dial-type

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hygrometer/thermometers. Airflow, temperature, and relative humidity will be monitored continually and recorded at least 3 times for each exposure chamber during each exposure. Chamber oxygen concentration will be targeted to be at least 19%, will be measured with a Biosystems model 3100R Oxygen Analyzer, and will be recorded at least once in each exposure chamber during each exposure.

D. Duration of Exposure

Each group of time-mated female rats will be exposed daily, 6 hours/day, during Days 6-20G. Males will be exposed concurrently with females. The starting time of each exposure will be defined as the time when the generation system is turned on. The ending time of each exposure will be defined as the time when the generation system is turned off. Rats will be exposed to the test substance during both the time it takes for the chamber to reach concentration, and the time it takes for the test substance to be purged from the chamber. After each exposure, rats will be returned to their home cages.

E. Test Species

Species: Rat
Strain: Crl:CD(SD)

Sex: Males and time-mated females

Source: Charles River Laboratories, Inc
Raleigh, North Carolina

Number of Rats Requested: 25 males; 20 females

Age at Arrival: Approximately 59 days (males) and
approximately 63 days (females) (day 2 of gestation)

Age at Experimental
Initiation (First day of
Exposure): Approximately 65 days old (males)
Approximately 67 days old (females) (day 6 of gestation)

Weight at Arrival: Approximately 201-225 grams (males);
Approximately 176-225 grams (females)(gestation day 0
weights will be supplied by the supplier)
The weight range is not a factor for the purposes of this study
and, therefore, deviations outside of this range are expected not
to have any impact on the study. The body weight range will be
documented in the study records and provided in the final report.

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Identification: Dams: The number assigned to each animal will be marked on the tail during pretest period and included on cage label.
Males: The males will be assigned a pretest number and a study identification number. The study identification number will be tattooed on the tail and will be included on the cage label.

Selection Criteria: Consistently acceptable health status and extensive experience with this strain at Haskell Laboratory. Preferred species as recommended in the testing guidelines.

F. Animal Husbandry

Housing - Male

All Phases: Individually in stainless steel, wire-mesh cages suspended above cage boards; sexes on separate racks.

Housing – Female

All Phases: Individually in stainless steel, wire-mesh cages suspended above cage boards; sexes on separate racks.

Cage Rack Positioning: Cage racks will not be relocated within the animal room.

Climate: Temperature of 18-26°C
Relative humidity of 30%-70%
Unless judged by the study director or the laboratory veterinarian to have affected the results of the study, the relative humidity and temperature ranges in the housing rooms will be recorded but will not be included in the final report.

Illumination: Artificial (fluorescent light) on an approximate 12-hour light/dark cycle.

Water: Tap water from United Water Delaware *ad libitum* provided by an automatic watering system except during exposure.

Feed: PMI® Nutrition International, LLC Certified Rodent LabDiet® 5002 (pelleted) *ad libitum* except during exposure.

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G. Animal Health and Environmental Monitoring Program

As specified in the Haskell Laboratory animal health and environmental monitoring program, the following procedures are performed periodically to ensure that contaminant levels are below those that would be expected to impact the scientific integrity of the study:

Water Screening Tests: Total bacterial counts, and the presence of coliforms, lead, and other contaminants

Cage and Cage Rack Screening Tests: Analyzed for sentinel bacteria to ensure adequate sanitation by the cagewashers

Feed: Certified animal feed is used, guaranteed by the manufacturer to meet specified nutritional requirements and not to exceed stated maximum concentrations of key contaminants, including specified heavy metals, aflatoxin, chlorinated hydrocarbons, and organophosphates.

Program Administration: Laboratory animal veterinarian

Data: Maintained separately from study records and may be included in the final report at the discretion of the study director

H. Pretest Period/Quarantine

Pretest Period: Minimum of 3 days

Quarantine: Minimum of 3 days during the pretest period

Quarantine Release: Performed by the laboratory animal veterinarian or designee on the basis of adequate body weight gain and absence of clinical signs of disease or injury.

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I. Assignment to Groups

Selection Criteria: Animals without adequate body weight gain and/or with clinical signs of disease or injury may be eliminated from consideration for use in the study.

Randomization: Computerized randomization procedure designed to produce a homogeneous distribution of body weights across groups.

Animals that lose excessive weight or that are ill prior to the start of dosing will be removed from the study, sacrificed and discarded without pathological evaluation, or may be released for other laboratory purposes at the discretion of the study director.

Disposition of Remaining

Animals: To be sent to Animal Resources or sacrificed by carbon dioxide asphyxiation at the discretion of the study director.

J. Clinical Observations

1. Daily Animal Health Observations

Frequency: All animals – At least once daily during quarantine and pretest, and once daily thereafter. On exposure days, the observations will be conducted at the time animals are placed in the exposure modules.

Scope: Cage-site examination to detect moribund or dead animals.

2. Careful Clinical Observations

Frequency: All animals – once daily after initiation of exposures. The observations will be conducted upon return to the home cages.

Scope: Acute/systemic toxicity

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3. Clinical Observations During Inhalation Exposure

Frequency: All animals visible to the observer through the glass window of the chamber will be observed at least 3 times during the exposure.

Scope: Observations through the window of the chamber for abnormal behavior or appearance.

K. Body Weight

Quarantine/pretest: All animals – at least twice.

Females – day 4G

Exposure Period: Males: daily

Females: daily on days 6-21G.

L. Food Consumption and Food Efficiency

Males: Daily

Females: Daily

Calculation of Food Consumption: Feeders will be weighed and spillage estimated. The ending

weight of the feeder and amount of spillage from the feeder will be subtracted from initial weight.

Calculation of Mean

Daily Food Efficiency: From food consumption and body weight data

M. Postmortem Evaluations

1. Postmortem Observations of Animals Dying Prior to Scheduled Euthanasia

A gross external and visceral examination will be performed within 24 hours after the animal is found dead. Pregnancy status of dams will be recorded. Lesions noted will be retained. Dead animals will be refrigerated until necropsied.

2. Postmortem Observations of Dams Delivering Early

a. Dam Observations

Dams that deliver before scheduled euthanasia will be euthanized by carbon dioxide asphyxiation and a gross external and internal examination will be performed. Pregnancy status will be recorded. Lesions noted will be retained.

b. Fetal Observations

Fetuses remaining in the uterus and pups delivered early will be examined to the extent possible.

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3. Postmortem Observations of Females Surviving to Scheduled Euthanasia

Dams will be euthanized by carbon dioxide asphyxiation, and a gross external and internal examination will be conducted as described below.

a. Viscera

Viscera will be examined grossly immediately after euthanasia on day 21G. Lesions noted will be retained.

b. Uterine Weight

The gravid uterus of each dam will be weighed. This weight will be subtracted from the terminal maternal body weight to obtain the net terminal maternal body weight. Gravid uterine weights will not be reported.

c. *Corpora Lutea*

The count for each ovary of females with viable fetuses will be recorded.

d. Implantation Sites

For each female with visible implantation sites, the types of implants (live and dead fetuses, and resorptions) and their relative positions will be recorded. The uterus of each apparently "nonpregnant" female will be stained with ammonium sulfide⁽³⁾ to detect very early resorptions; number of implantation sites will be recorded.

e. Organ Weights

The weight of the following organs will be recorded for all female rats sacrificed by design:

Lungs
Liver
Kidneys

Relative organ weights (percent of final body weight) and group mean organ weights for weighed organs, will be calculated. Final body weights, determined just prior to necropsy, will be used in the assessment of organ weight changes.

4. Fetuses of Females Surviving to Scheduled Euthanasia

a. Number, Location, Sex, and Condition

These parameters will be recorded for each fetus.

b. Fetal Weight

The body weight of each viable fetus will be recorded.

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c. External Alterations

The alterations detected for each live fetus will be recorded.

d. Fetal Euthanasia

Fetuses will be injected with sodium pentobarbital (i.p.) after the external examination is complete.

5. Postmortem Evaluation of Male Rats Surviving to Scheduled Sacrifice

All male rats that are found dead, accidentally killed, sacrificed *in extremis*, or sacrificed by design will undergo a gross evaluation. Lesions noted will be retained. Rats will be euthanized by carbon dioxide asphyxiation and exsanguination. The order of sacrifice for scheduled deaths will be random among all treatment groups.

a. Organ Weights

The weight of the following organs will be recorded for all male rats sacrificed by design:

Lungs
Liver
Kidneys
Testes

Relative organ weights (percent of final body weight) and group mean organ weights for weighed organs, will be calculated. Final body weights, determined just prior to necropsy, will be used in the assessment of organ weight changes.

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N. Control of Bias

In addition to random assignment to groups, all females will be coded before scheduled euthanasia and will remain coded during the collection of postmortem and fetal data.

STATISTICAL ANALYSES

Parameter	Method of Statistical Analysis		
	Preliminary Test	If Preliminary Test is Not Significant	If preliminary test is significant
Body weight Body weight change Food consumption Live fetuses Dead fetuses Resorptions Implantations Organ weights Relative organ weights	Levene's test for homogeneity ⁽⁴⁾ and Shapiro-Wilk test ⁽⁵⁾ for normality ^a	One-way analysis of variance ⁽⁶⁾ and Dunnett's test ^(7,8,9)	Kruskal-Wallis test ⁽¹⁰⁾ followed with Dunn's test ⁽¹¹⁾
Clinical observations Mortality Incidence of pregnancy Females with total resorptions Early deliveries	None	Cochran-Armitage test ^{(6)b}	
Incidence of fetal alterations	None	Exact Mann-Whitney with a Bonferroni-Holm adjustment ^(12,13)	
Fetal weight (Covariates: litter size, sex ratio) Sex ratio (Covariate: litter size)	Levene's test for homogeneity ⁽⁴⁾ and Shapiro-Wilk test ⁽⁵⁾ for normality ^c	Analysis of covariance ⁽⁶⁾ and Dunnett-Hsu ⁽¹⁴⁾	Non-parametric analysis of covariance ⁽¹⁵⁾

a If the Shapiro-Wilk test is not significant but Levene's test is significant, a robust version of Dunnett's test will be used. If the Shapiro-Wilk test is significant, Kruskal-Wallis test is followed by Dunn's test.

b If the incidence is not significant, but a significant lack of fit occurs, then Fisher's Exact test⁽¹⁶⁾ with a Bonferroni correction is used.

c A normalizing, variance stabilizing transformation may be used as needed.

For litter parameters, the proportion of affected fetuses per litter or the litter mean will be used as the experimental unit for statistical evaluation.⁽¹⁷⁾ The level of significance selected is $p < 0.05$. Additional statistical tests will be used, and other parameters analyzed, if deemed necessary.

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SAFETY AND HOUSEKEEPING

Procedures for handling the test substance will be in accordance with the Process Safety Review for this study.

Animal carcasses, feces, and unused food will be incinerated.

RECORDS AND SAMPLE STORAGE

Specimens (if applicable), all raw data, the protocol, amendments (if any), and the final report will be retained in the archives of Haskell Laboratory for ten years following the issuance of the final report. After that period, arrangements will be made to either return all materials to the Sponsor or archive them longer at Haskell Laboratory.

STUDY DATES

Proposed Experimental Start:	February 20, 2006
Proposed In-life Completion Date	March 8, 2006

REFERENCES

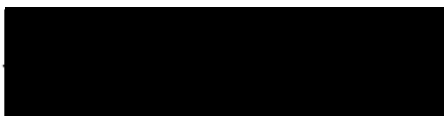
1. United States Environmental Protection Agency High Production Volume (HPV) Challenge Program Robust Summaries & Test Plans: Gasoline Blending Streams Category (last accessed February 2006). <http://www.epa.gov/hpv/gasneecat/c13409tc.htm>.
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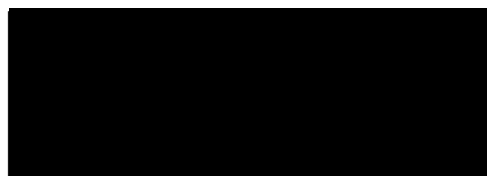
DuPont-18330

SIGNATURES

Approved by:



15-Feb-2006
Date



2/14/2006
Date

Naphtha, Petroleum, Heavy Straight-Run: Pilot Inhalation Developmental and Two-Week
Toxicity Study in Rats

DuPont-18330

Naphtha, Petroleum, Heavy Straight-Run: Pilot Inhalation Developmental and Two-Week
Toxicity Study in Rats

Work Request Number 16123

Service Code 730

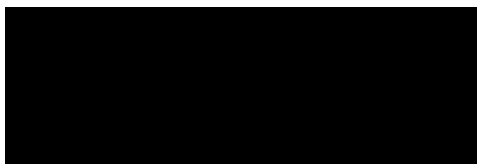
Protocol Amendment 1

The protocol is amended as follows:

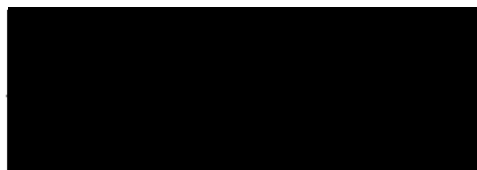
1. On the title page, change the name of the test substance to: Naphtha, Petroleum, Heavy
Straight-Run

Rationale: The change was requested by the sponsor.

Approved by:



17 July 2006
Date



6/23/06
Date

Highly Naphthenic Naptha:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

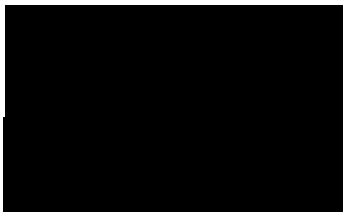
Work Request Number 16123
Service Code 730
Protocol Amendment 2

The protocol is amended as follows:

1. The Sponsor Representative is changed to: Russell D. White, Ph.D., D.A.B.T.®

Rationale: At the Sponsor's request, the Sponsor Representative is changed.

Approved by:



Sept 12, 2008
Date

9/10/2008
Date

Appendix C
Sponsor-Supplied Compound List for Naphtha, Petroleum, Heavy Staight-Run

11/19/2005 WED 16:26 FAX

003/008

Hydrocarbon Expert v3.2	Mon Oct 18 10:33:16 2004	Page 1
File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF	14-Oct-04, 11:40:40	
Sample: Hux Drum #1	Operator:	
Parameter: C:\HPCHEM\HCE30\HUX TANK 31		

Component List

Pk#	Time	Group	Component	%Wgt	%Vol	%Mol
1	27.926	I6 64	2,3-Dimethylbutane	0.007	0.008	0.010
2	28.974	I6 74	2-Methylpentane	0.064	0.074	0.084
3	31.607	I6 80	3-Methylpentane	0.085	0.095	0.110
4	35.331	P6 96	n-Hexane	0.181	0.205	0.236
5	40.127	N6 112	McyC5+2,2DMC5	0.669	0.667	0.893
6	41.743	I7 116	2,4-Dimethylpentane	0.140	0.156	0.157
7	42.310	I7 118	2,2,3-Trimethylbutane	0.007	0.008	0.008
8	45.102	A6 130	Benzene	0.108	0.092	0.156
9	46.708	I7 134	33DMC5+5m1C6ene	0.046	0.049	0.051
10	46.975	N6 136	Cyclohexane	0.496	0.476	0.662
11	50.221	I7 156	2-MethylC6 + C7-Olefin	4.090	4.500	4.585
12	52.055	I7 166	3-Methylhexane	3.230	3.517	3.621
13	52.832	N7 172	t-1,3-DimethylcyC5	1.464	1.450	1.674
14	53.403	N7 174	c-1,3-DMcyclopentane	1.327	1.323	1.518
15	54.023	N7 176	t-1,2-DimethylcycloC5	1.621	1.613	1.855
16	54.159	I7 180	3-Ethylpentane	0.226	0.241	0.253
17	54.613	I8 186	2,2,4-Trimethylpentane	0.039	0.042	0.039
18	54.990	O7 189	C7-Olefin	0.008	0.008	0.009
19	57.702	P7 200	n-Heptane	6.621	7.230	7.421
20	61.065	N7 222	Methylcyclohexane	6.962	6.762	7.964
21	61.883	N8 224	1,1,3-TrimethylcycloC5	0.477	0.477	0.478
22	62.325	I8 226	2,2-Dimethylhexane	0.060	0.065	0.059
23	63.722	N7 234	Ethylcyclopentane	1.200	1.170	1.372
24	64.393	I8 240	2,2,3-Trimethylpentane	0.013	0.013	0.013
25	64.642	I8 245	2,5-DMC6 + C8-olefin	0.495	0.530	0.487
26	64.980	I8 250	2,4-Dimethylhexane	0.582	0.622	0.573
27	65.790	N8 260	t,c-1,2,4-TriMcyC5	0.932	0.932	0.933
28	66.201	I8 265	3,3-DMC6 + C8-olefin	0.077	0.081	0.075
29	67.298	N8 278	t,c-1,2,3-TriMcyC5	0.647	0.642	0.648
30	67.939	I8 292	2,3,4-Trimethylpentane	0.064	0.067	0.063
31	68.519	A7 300	Toluene	3.997	3.443	4.873
32	69.946	O8 312	C8-Olefin	0.196	0.205	0.196
33	70.285	I8 314	2,3-Dimethylhexane	0.393	0.413	0.387
34	70.428	I8 316	2-M-3-Epentane	0.163	0.170	0.161
35	71.674	I8 326	2-Methylheptane	3.039	3.253	2.989
36	71.885	I8 328	4-Methylheptane	1.003	1.039	0.986
37	72.056	O7 330	C7-Diolefin + C8-Olefin	0.189	0.199	0.189
38	72.190	O8 333	C8-Olefins	0.159	0.166	0.159
39	72.738	N8 335	t-1,4-DiMcyC6	1.945	1.846	1.947

Recovery = 100.00

11/15/2005 WED 16:27 FAX

004/008

Hydrocarbon Expert V3.2	Mon Oct 18 10:33:16 2004	Page 2
File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF	14-Oct-04, 11:40:40	
Sample: Hux Drum #1	Operator:	
Parameter: C:\HPCHEM\HCE30\HUX TANK 31		

Component List

Pk#	Time	Group	Component	%Wgt	%Vol	%Mol
40	72.937	I8	336 3-Methylheptane	2.493	2.638	2.452
41	73.079	I8	338 3-Ethylhexane	1.185	1.240	1.165
42	73.927	O8	348 C8-Olefin	0.248	0.260	0.248
43	74.748	N8	352 c1Ethyl-3-methylcyC5	0.800	0.776	0.801
44	75.104	N8	356 t-1-E-3-McyC5	0.737	0.716	0.738
45	75.322	N8	360 t-1-E-2-McyC5	0.703	0.680	0.704
46	75.583	N8	362 1-M-1-EcyC5	0.075	0.072	0.075
47	76.008	N8	368 t-1,2-DiMcyC6	0.859	0.827	0.860
48	76.942	N8	385 t-1,3-DiMcyC6	0.069	0.066	0.069
49	77.244	N8	390 c-1,4-DiMcyC6	1.303	1.250	1.305
9-50	77.537	P8	400 n-Octane	5.463	5.805	5.372
51	78.327	O9	410 C9-Olefin	0.174	0.180	0.155
52	78.468	O9	412 C9-Olefin	0.116	0.120	0.103
53	79.056	I9	418 2,2,4-Trimethylhexane	0.025	0.026	0.021
54	79.382	I9	420 2,4,4-Trimethylhexane	0.052	0.054	0.046
55	79.982	I9	424 2,3,5-Trimethylhexane	0.302	0.313	0.265
56	80.451	I9	428 2,2,3,4-TetraMC5	0.056	0.058	0.049
57	80.825	N8	432 c-1,2-DiMcyC6	0.334	0.311	0.334
58	81.064	I9	434 2,4-Dimethylheptane	0.412	0.431	0.361
59	81.343	O9	436 C9-Olefin	0.069	0.071	0.061
10 60	81.663	N8	440 Ethylcyclohexane	2.059	1.952	2.061
61	81.863	I9	444 2-Methyl-4-Ethylhexane	0.055	0.057	0.048
62	82.029	I9	446 2,6-Dimethylheptane	0.811	0.841	0.710
63	82.188	O9	449 C9-Olefin	0.128	0.132	0.114
64	82.465	O9	452 C9-Olefins	0.923	0.950	0.822
65	82.797	O9	454 C9-Olefins	0.170	0.175	0.152
66	82.955	I9	458 2,5 & 3,5-DMheptane	0.701	0.722	0.614
67	83.116	O9	460 C9-Olefins	0.118	0.122	0.105
68	83.235	I9	462 3,3-Dimethylheptane	0.205	0.212	0.179
69	83.411	?	Unidentified	0.326	0.338	0.285
70	83.640	I9	466 C9-Isoparaffin	0.214	0.219	0.187
71	84.232	A8	475 Ethylbenzene	1.012	0.872	1.070
72	84.407	N9	480 t-1,2,4-TrimethylcyC6	0.347	0.332	0.309
73	84.639	I9	485 2,3,4-Trimethylhexane	0.616	0.623	0.539
74	84.892	O9	490 C9-Olefins	0.088	0.090	0.078
75	85.166	I9	495 3,3,4-Trimethylhexane?	0.153	0.153	0.134
11 76	85.473	A8	500 m-Xylene	1.973	1.706	2.087
77	85.603	A8	502 p-Xylene	0.697	0.604	0.737
78	85.754	I9	503 2,3-Dimethylheptane	0.508	0.520	0.445

Recovery = 100.00

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File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF	14-Oct-04, 11:40:40	
Sample: Hux Drum #1	Operator:	
Parameter: C:\HPCHEM\HCE30\HUX TANK 31		

Component List

Pk#	Time	Group	Component	%Wgt	%Vol	%Mol
79	86.000	I9	506 3,4-Dimethylheptane	0.064	0.066	0.056
80	86.191	O9	508 C9-Olefin	0.214	0.219	0.190
81	86.389	I9	510 3-Methyl-3-ethylhexane	0.242	0.244	0.212
82	86.553	I9	516 4-Ethylheptane	0.101	0.103	0.088
83	86.831	I9	518 4-MC8+C9-Olefin	0.872	0.904	0.763
84	86.978	I9	520 2-Methyloctane	1.187	1.247	1.039
85	87.320	I9	524 C9-Isoparaffin	0.170	0.176	0.149
86	87.652	I9	528 3-Ethylheptane	0.386	0.395	0.338
87	87.836	I9	530 3-Methyloctane	1.520	1.566	1.331
88	88.071	N9	540 c-1,2,4-TriMcyC6	0.088	0.084	0.079
89	88.289	N9	545 1,1,2-TriMcyC6	0.138	0.135	0.123
90	88.426	A8	550 o-Xylene	1.175	0.997	1.243
91	88.543	O9	560 C9-Olefin	0.083	0.085	0.074
92	88.669	O9	562 C9-Olefin	0.149	0.152	0.133
93	88.873	O9	564 C9-Olefin	0.021	0.021	0.018
94	88.950	?	Unidentified	0.022	0.023	0.020
95	89.250	N9	568 t-1-E-4-M-cyC6?	0.527	0.493	0.468
96	89.404	N9	570 c-1-E-4-McyC6?	0.805	0.753	0.716
97	89.695	I9	572 C9-Isoparaffin	0.423	0.431	0.370
98	90.008	O9	575 1-Nonene	0.101	0.102	0.090
99	90.179	N9	580 Isobutylcyclopentane	0.145	0.138	0.129
100	90.262	?	Unidentified	0.091	0.087	0.081
101	90.967	O9	590 cis-3-Nonene	0.074	0.076	0.066
102	91.094	I9	595 C9-Isoparaffin	0.026	0.026	0.022
103	91.369	P9	600 n-Nonane	4.300	4.474	3.766
104	91.750	O9	604 trans-2-Nonene	0.523	0.529	0.465
105	92.096	N9	606 1-M-1-Ecyclohexane	0.179	0.166	0.159
106	92.302	O10	610 C10-Olefin	0.023	0.023	0.018
107	92.578	A9	616 Isopropylbenzene	0.134	0.116	0.125
108	92.774	O9	618 cis-2-Nonene	0.027	0.027	0.024
109	92.906	N9	620 tert-Butylcyclopentane	0.125	0.118	0.111
110	93.053	O9	622 C9-Olefins	0.317	0.321	0.282
111	93.293	O9	624 C9-Olefin	0.253	0.256	0.225
112	93.565	N9	626 Isopropylcyclohexane	0.233	0.217	0.207
113	93.821	I10	630 2,2-Dimethyloctane	0.134	0.138	0.106
114	93.975	?	Unidentified	0.025	0.025	0.019
115	94.068	?	Unidentified	0.021	0.021	0.016
116	94.373	N10	634 1-M-4-isopropylcyC6?	0.351	0.331	0.281
117	94.525	N9	636 sec-Butylcyclopentane	0.562	0.531	0.500

Recovery = 100.00

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File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF		14-Oct-04, 11:40:40
Sample: Hux Drum #1		Operator:
Parameter: C:\HPCHEM\HCE30\HUX TANK 31		

Component List

Pk#	Time	Group	Component	%Wgt	%Vol	%Mol
118	94.697	I10	638 2,6-Dimethyloctane	0.103	0.105	0.081
119	94.850	I10	640 2,5-Dimethyloctane?	0.111	0.112	0.087
120	94.957	N9	642 Butylcyclopentane	0.312	0.296	0.277
121	95.143	N9	644 Propylcyclohexane	0.105	0.098	0.093
122	95.409	I10	646 3,6-Dimethyloctane	0.726	0.734	0.573
123	95.547	N9	648 1-M-2-EcycloC6	0.105	0.097	0.093
124	95.694	?	Unidentified	0.058	0.059	0.047
125	95.826	O10	650 C10-Olefin	0.140	0.141	0.112
126	96.016	A9	651 Propylbenzene	0.469	0.407	0.439
127	96.241	I10	652 3,6-Dimethyloctane	0.450	0.457	0.356
128	96.473	I10	653 3-Methyl-5-ethylheptane	0.080	0.081	0.063
129	96.612	O10	654 C10-Olefin	0.104	0.105	0.083
130	96.735	?	Unidentified	0.040	0.040	0.032
131	96.870	A9	655 1-Ethyl-3-methylbenzene	0.696	0.601	0.650
132	97.099	A9	656 1-Ethyl-4-methylbenzene	0.419	0.363	0.391
133	97.276	?	Unidentified	0.019	0.018	0.015
134	97.366	N10	657 C10-Naphthene	0.016	0.015	0.013
135	97.707	A9	658 1,3,5-Trimethylbenzene	0.684	0.591	0.639
136	97.977	I10	659 2,3-Dimethyloctane	0.062	0.063	0.049
137	98.115	?	Unidentified	0.084	0.086	0.067
138	98.215	I10	660 5-Methylnonane	0.229	0.234	0.181
139	98.409	I10	661 4-Methylnonane	0.556	0.563	0.439
140	98.685	I10	662 2-Methylnonane	0.500	0.513	0.395
141	98.785	A9	663 1-Ethyl-2-methylbenzene	0.325	0.274	0.303
142	99.050	N10	666 C10-Naphthene	0.159	0.147	0.128
143	99.231	?	Unidentified	0.029	0.030	0.023
144	99.380	I10	668 3-Methylnonane	0.485	0.494	0.383
145	99.555	?	Unidentified	0.177	0.179	0.142
146	99.706	O10	670 C10-Olefin	0.048	0.048	0.038
147	99.853	I10	671 C10-Isoparaffin	0.131	0.134	0.104
148	100.159	I10	672 C10-Isoparaffin	0.064	0.066	0.051
149	100.415	A9	673 1,2,4-Trimethylbenzene	0.753	0.642	0.704
150	100.582	?	Unidentified	0.162	0.165	0.128
151	100.749	I10	674 C10-Isoparaffin	0.210	0.214	0.166
152	100.900	I10	675 C10-Isoparaffin	0.184	0.188	0.146
153	101.051	I10	676 Isobutylcyclohexane	0.089	0.083	0.070
154	101.241	?	Unidentified	0.025	0.026	0.020
155	101.341	N10	677 C10-Isoparaffin	0.082	0.084	0.066
156	101.493	I10	678 C10-Isoparaffin	0.043	0.044	0.034

Recovery = 100.00

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File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF		14-Oct-04, 11:40:40
Sample: Hux Drum #1		Operator:
Parameter: C:\HPCHEM\HCE30\HUX TANK 31		

Component List

Pk#	Time	Group	Component	%Wgt	%Vol	%Mol
157	101.616	I10	682 C10-Isoparaffin	0.017	0.018	0.014
158	101.815	A10	690 Isobutylbenzene	0.064	0.056	0.054
159	102.017	I10	694 C10-Isoparaffin	0.093	0.094	0.073
160	102.329	P10	700 n-Decane	1.911	1.955	1.508
161	102.601	I11	702 C11-Isoparaffin	0.031	0.032	0.023
162	102.675	?	Unidentified	0.020	0.020	0.014
163	102.813	?	Unidentified	0.035	0.036	0.025
164	102.871	?	Unidentified	0.028	0.028	0.020
165	103.061	I11	704 C11-Isoparaffin	0.047	0.047	0.033
166	103.258	A9	705 1,2,3-Trimethylbenzene	0.309	0.258	0.289
167	103.453	?	Unidentified	0.032	0.028	0.027
168	103.529	A10	706 1-M-3-isopropylbenzene	0.029	0.026	0.025
169	103.686	A10	708 1-M-4-isopropylbenzene	0.059	0.052	0.050
170	103.869	I11	709 C11-Isoparaffin	0.110	0.111	0.079
171	104.087	I11	710 C11-Isoparaffin?	0.030	0.030	0.021
172	104.278	?	Unidentified	0.035	0.027	0.033
173	104.424	A9	712 2,3-Dihydroindene	0.167	0.130	0.159
174	104.540	?	Unidentified	0.030	0.023	0.028
175	104.724	N10	714 sec-Butylcyclohexane	0.300	0.274	0.240
176	104.989	?	Unidentified	0.019	0.016	0.016
177	105.092	I11	720 3-Ethylnonane	0.017	0.017	0.012
178	105.217	?	Unidentified	0.066	0.067	0.048
179	105.328	I11	721 C11-Isoparaffin	0.050	0.050	0.036
180	105.482	N10	722 C10-Naphthene	0.128	0.117	0.102
181	105.799	I11	723 C11-Isoparaffin	0.146	0.145	0.129
182	105.988	A10	724 1,3-Diethylbenzene	0.064	0.055	0.053
183	106.242	A10	725 1-M-3-propylbenzene	0.216	0.187	0.181
184	106.430	A10	726 1,4-Diethylbenzene	0.026	0.023	0.022
185	106.601	A10	727 1-M-4-propylbenzene	0.068	0.060	0.057
186	106.708	A10	728 Butylbenzene	0.068	0.059	0.057
187	106.833	A10	729 3,5-DM-1-Ebenzene	0.075	0.065	0.063
188	106.992	?	Unidentified	0.038	0.032	0.032
189	107.112	A10	730 1,2-Diethylbenzene?	0.038	0.032	0.032
190	107.367	I11	732 C11-Isoparaffin	0.042	0.042	0.030
191	107.556	A10	736 C10-Aromatic	0.042	0.036	0.035
192	107.668	A10	738 C10-Aromatic	0.092	0.079	0.077
193	107.819	A10	740 1-M-2-propyl benzene	0.071	0.060	0.059
194	107.974	?	Unidentified	0.010	0.009	0.007
195	108.087	I11	748 4-Methyldecane	0.071	0.066	0.051

Recovery = 100.00

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File: C:\HPCHEM\1\DATA\PIANO2\SETUP054.D\SETUP054_FID1_A.CDF

14-Oct-04, 11:40:40

Sample: Hux Drum #1

Operator:

Parameter: C:\HPCHEM\HCE30\HUX TANK 31

Component List

PK#	Time	Group	Component	%Wgt	%Vol	%Mol
196	108.388	I11	754 C11-Isoparaffin	0.071	0.067	0.051
197	108.526	A10	756 1,4-DM-2-Ebenzene	0.064	0.054	0.053
198	108.688	A10	758 1,3-DM-4-Ebenzene	0.058	0.049	0.048
199	108.815	I11	762 3-Methyldecane	0.019	0.020	0.014
200	108.934	?	Unidentified	0.062	0.062	0.044
201	109.196	A10	764 1,2-DM-4-Ebenz+C1indan	0.075	0.064	0.063
202	109.387	I11	766 C11-Isoparaffin	0.015	0.014	0.011
203	109.656	?	Unidentified	0.023	0.019	0.019
204	109.744	A10	768 1,3-DM-2-Ebenzene	0.017	0.014	0.014
205	109.877	?	Unidentified	0.009	0.008	0.008
206	109.997	?	Unidentified	0.012	0.012	0.009
207	110.172	I11	770 C11-Isoparaffin	0.023	0.022	0.017
208	110.507	I11	775 C11-Isoparaffin	0.011	0.011	0.008
209	110.657	A11	780 1-M-4-tert-butylbenzene	0.011	0.009	0.008
210	110.728	?	Unidentified	0.016	0.014	0.012
211	110.852	A10	785 1,2-DM-3-ethylbenzene	0.030	0.025	0.025
212	111.187	P11	800 n-Undecane	0.156	0.157	0.112
213	111.367	A11	802 1-E-4-isopropylbenzene	0.018	0.015	0.013
214	111.618	I12	804 C12-Isoparaffin	0.011	0.011	0.008
215	111.796	A10	806 1,2,4,5-TetraMbenzene	0.014	0.012	0.012
216	112.057	A10	810 1,2,3,5-TetraMbenzene	0.020	0.017	0.017
217	112.400	A11	814 C11-Aromatic	0.009	0.007	0.007
218	112.631	A11	816 C11-Aromatic	0.013	0.011	0.010
219	113.371	A11	826 1-Ethyl-2-propylbenzene	0.015	0.013	0.011
220	113.913	A11	832 C11-Aromatic	0.008	0.007	0.006
221	114.123	A11	834 1-Methyl-3-butylbenzene	0.014	0.012	0.010
222	114.383	A11	836 1,2,3,4-TetraMbz+C11aro	0.013	0.011	0.011
223	114.891	A11	842 C11-Aromatic	0.013	0.011	0.010
224	129.405	A12	970 1,5-Dimethylnaphthalene	0.006	0.005	0.005
225	130.694	A12	976 1,2-Dimethylnaphthalene	0.011	0.008	0.008

Recovery = 100.00

Appendix D
Daily Chamber Concentrations

DAILY CHAMBER CONCENTRATIONS

EXPLANATORY NOTES

ABBREVIATIONS:

n - number of samples
ppm - parts per million
S.D. - standard deviation

NOTES:

Values are reported to 2 significant figures.
Calculations were performed prior to rounding values.

Daily Chamber Concentrations (ppm)																
Exposure	0 ppm				250 ppm				1000 ppm				4000 ppm			
	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n
1	0.0	0.0	0.0	2	240	61	130 - 300	6	1000	26	960 - 1000	6	4000	48	3900 - 4100	6
2	0.0	0.0	0.0	2	250	18	230 - 270	6	1000	40	950 - 1100	6	4000	570	2800 - 4300	6
3	0.0	0.0	0.0	2	250	15	230 - 270	6	1000	20	980 - 1000	6	4000	170	3800 - 4200	6
4	0.0	0.0	0.0	2	250	14	240 - 270	6	1000	35	960 - 1100	6	4100	200	3700 - 4400	6
5	0.0	0.0	0.0	2	240	8.0	230 - 250	6	1000	39	930 - 1000	6	4000	23	3900 - 4000	6
6	0.0	0.0	0.0	2	250	15	230 - 270	6	1000	27	980 - 1100	6	4000	73	3900 - 4100	6
7	0.0	0.0	0.0	2	250	13	230 - 270	6	1000	17	970 - 1000	6	4000	57	3900 - 4100	6
8	0.0	0.0	0.0	2	260	13	240 - 270	6	990	39	930 - 1000	6	3900	160	3600 - 4000	6
9	0.0	0.0	0.0	2	260	13	250 - 270	6	990	50	930 - 1000	6	4000	120	3900 - 4200	6
10	0.0	0.0	0.0	2	250	8.5	240 - 260	6	1000	71	910 - 1100	6	4000	170	3700 - 4100	6
11	0.0	0.0	0.0	2	260	7.7	240 - 270	6	1000	19	1000	6	4000	180	3600 - 4100	6
12	0.0	0.0	0.0	2	250	13	220 - 260	6	1000	34	940 - 1000	6	4000	87	3900 - 4100	6
13	0.0	0.0	0.0	2	260	6.0	250 - 260	6	1000	22	970 - 1000	6	4000	52	3900 - 4100	6
14	0.0	0.0	0.0	2	250	11	230 - 260	6	1000	23	960 - 1000	6	4000	61	3900 - 4100	6
15	0.0	0.0	0.0	2	250	8.1	240 - 260	6	1000	29	960 - 1000	6	4000	91	3900 - 4200	6
16	0.0	0.0	0.0	2	250	10	240 - 270	6	1000	21	960 - 1000	6	4000	17	4000	6

Appendix E

Daily Nominal Concentration Calculations

DAILY NOMINAL CONCENTRATION CALCULATIONS

EXPLANATORY NOTES

NOTES:

Calculations were performed prior to rounding values.

Daily Nominal Concentration Calculations for 250 ppm Chamber

Exposure	Total Amount of Test Substance Metered into Generation System (mL)	Mean Air Volume (L/min)	Nominal Concentration (mg/L)	Nominal Concentration (ppm)	Analytical Concentration (ppm)
1	180	317	1.177	259	244
2	156	303	1.067	234	251
3	168	298	1.168	257	247
4	158	290	1.129	248	251
5	168	303	1.149	253	242
6	168	294	1.184	260	254
7	164	302	1.125	247	253
8	164	299	1.137	250	256
9	154	268	1.191	262	260
10	150	272	1.143	251	252
11	144	252	1.184	260	256
12	158	268	1.222	268	246
13	150	268	1.160	255	255
14	156	265	1.220	268	249
15	156	267	1.211	266	247
16	142	264	1.115	245	252

Daily Nominal Concentration Calculations for 1000 ppm Chamber

Exposure	Total Amount of Test Substance Metered into Generation System (mL)	Mean Air Volume (L/min)	Nominal Concentration (mg/L)	Nominal Concentration (ppm)	Analytical Concentration (ppm)
1	623	294	4.391	965	1004
2	603	298	4.193	922	1013
3	600	306	4.063	893	1005
4	575	275	4.333	952	1012
5	588	285	4.275	940	1004
6	583	259	4.665	1025	1012
7	572	277	4.279	940	995
8	605	256	4.897	1076	993
9	617	259	4.937	1085	989
10	625	269	4.815	1058	1024
11	578	265	4.520	993	1018
12	592	279	4.397	966	1007
13	584	270	4.482	985	1007
14	588	252	4.835	1063	1006
15	570	251	4.706	1034	1000
16	558	262	4.413	970	1000

Daily Nominal Concentration Calculations for 4000 ppm Chamber

Exposure	Total Amount of Test Substance Metered into Generation System (mL)	Mean Air Volume (L/min)	Nominal Concentration (mg/L)	Nominal Concentration (ppm)	Analytical Concentration (ppm)
1	2340	267	18.161	3991	3988
2	2387	268	18.457	4056	4018
3	2231	267	17.315	3805	4040
4	2233	248	18.658	4101	4092
5	2149	260	17.128	3764	3962
6	2178	263	17.161	3771	3982
7	2225	277	16.645	3658	4007
8	2383	271	18.222	4005	3948
9	2336	265	18.267	4015	4025
10	2499	269	19.251	4231	3964
11	2613	276	19.619	4312	3963
12	2612	283	19.126	4203	4022
13	2566	259	20.530	4512	4004
14	2628	263	20.706	4551	4006
15	2536	252	20.854	4583	4004
16	2511	260	20.013	4398	3976

Appendix F
Daily Chamber Environmental Conditions

DAILY CHAMBER ENVIRONMENTAL CONDITIONS

EXPLANATORY NOTES

ABBREVIATIONS:

S.D. - standard deviation
n - number of observations

FOOTNOTES:

Value not calculable due to number of observations.

NOTES:

Values are reported to 2 significant figures.
Calculations were performed prior to rounding values.

Daily Chamber Environmental Conditions - Temperature (°C)

Exposure	0 ppm				250 ppm				1000 ppm				4000 ppm			
	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n
1	21	0.58	21 - 22	3	20	0.58	20 - 21	3	20	0.58	20 - 21	3	21	1.0	20 - 22	3
2	22	0.58	21 - 22	3	21	1.0	20 - 22	3	20	0.58	20 - 21	3	21	1.2	20 - 22	3
3	22	0.58	21 - 22	3	21	0.58	20 - 21	3	20	0	20	3	21	0.58	20 - 21	3
4	22	0	22	3	21	0.58	21 - 22	3	21	1.0	20 - 22	3	22	0.58	21 - 22	3
5	22	0	22	3	21	0.58	21 - 22	3	21	0.58	20 - 21	3	22	0.58	21 - 22	3
6	22	1.0	21 - 23	3	21	1.0	20 - 22	3	21	1.0	20 - 22	3	22	1.5	20 - 23	3
7	21	0.58	21 - 22	3	20	0.58	20 - 21	3	20	0	20	3	20	0.58	20 - 21	3
8	21	1.0	20 - 22	3	20	0.58	20 - 21	3	20	0.58	19 - 20	3	21	0.58	20 - 21	3
9	22	0.58	21 - 22	3	20	0.58	20 - 21	3	20	0.58	20 - 21	3	21	1.0	20 - 22	3
10	22	0.58	22 - 23	3	21	1.2	20 - 22	3	21	1.0	20 - 22	3	22	1.0	21 - 23	3
11	22	0	22	3	21	0.58	20 - 21	3	21	0.58	20 - 21	3	22	0.58	21 - 22	3
12	22	0.58	21 - 22	3	21	1.0	20 - 22	3	20	0.58	20 - 21	3	21	1.0	20 - 22	3
13	22	0.58	21 - 22	3	21	1.0	20 - 22	3	21	1.2	20 - 22	3	21	1.0	20 - 22	3
14	22	0.58	22 - 23	3	21	1.0	20 - 22	3	21	1.0	20 - 22	3	22	1.5	20 - 23	3
15	22	1.0	21 - 23	3	21	1.0	20 - 22	3	21	1.0	20 - 22	3	22	1.5	20 - 23	3
16	22	1.0	21 - 23	3	21	1.0	20 - 22	3	21	1.2	20 - 22	3	22	1.5	20 - 23	3

Daily Chamber Environmental Conditions - Relative Humidity (%)

Exposure	0 ppm				250 ppm				1000 ppm				4000 ppm			
	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n
1	31	0.58	31 - 32	3	30	0	30 - 30	3	36	0.58	36 - 37	3	31	0.58	30 - 31	3
2	34	0.58	34 - 35	3	33	0.58	33 - 34	3	39	1.0	38 - 40	3	35	2.5	33 - 38	3
3	41	1.0	40 - 42	3	39	1.2	38 - 40	3	43	1.0	42 - 44	3	40	0.58	39 - 40	3
4	44	0.58	44 - 45	3	45	0	45 - 45	3	46	0.58	46 - 47	3	43	1.0	42 - 44	3
5	34	1.5	33 - 36	3	33	1.5	32 - 35	3	38	1.5	37 - 40	3	33	2.5	31 - 36	3
6	37	0.58	36 - 37	3	36	0.58	35 - 36	3	40	0.58	39 - 40	3	35	0.58	35 - 36	3
7	34	1.5	33 - 36	3	33	1.5	32 - 35	3	38	1.5	37 - 40	3	33	2.0	31 - 35	3
8	35	1.2	34 - 36	3	34	1.2	33 - 35	3	39	0.58	38 - 39	3	33	1.5	32 - 35	3
9	35	2.1	33 - 37	3	34	1.2	33 - 35	3	38	1.5	37 - 40	3	33	2.5	31 - 36	3
10	34	1.0	33 - 35	3	34	1.2	33 - 35	3	38	1.5	36 - 39	3	32	2.0	30 - 34	3
11	43	0.58	43 - 44	3	43	1.2	42 - 44	3	46	0.58	45 - 46	3	40	2.0	38 - 42	3
12	36	1.5	35 - 38	3	35	1.5	34 - 37	3	40	2.1	38 - 42	3	37	1.5	35 - 38	3
13	35	1.5	34 - 37	3	35	1.0	34 - 36	3	40	1.5	38 - 41	3	36	2.1	34 - 38	3
14	34	1.5	33 - 36	3	34	1.5	33 - 36	3	38	1.5	37 - 40	3	34	2.5	32 - 37	3
15	32	1.0	31 - 33	3	32	1.2	31 - 33	3	37	1.0	36 - 38	3	32	2.1	30 - 34	3
16	33	1.0	32 - 34	3	34	1.2	33 - 35	3	38	1.2	37 - 39	3	34	2.1	32 - 36	3

Daily Chamber Environmental Conditions - Airflow (L/min)

Exposure	0 ppm				250 ppm				1000 ppm				4000 ppm			
	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n
1	270	6.0	260 - 280	3	320	16	300 - 330	3	290	7.5	290 - 300	3	270	14	250 - 280	3
2	270	14	260 - 280	3	300	12	290 - 310	3	300	28	280 - 330	3	270	24	250 - 300	3
3	270	3.1	270	3	300	13	290 - 310	3	310	20	290 - 330	3	270	14	250 - 280	3
4	270	10	260 - 280	3	290	6.5	280 - 300	3	280	11	270 - 290	3	250	3.6	250	3
5	260	1.2	260	3	300	8.2	290 - 310	3	290	14	270 - 300	3	260	20	250 - 280	3
6	250	3.1	250 - 260	3	290	1.5	290 - 300	3	260	6.1	250 - 270	3	260	19	240 - 280	3
7	270	4.7	260 - 270	3	300	4.0	300 - 310	3	280	14	270 - 290	3	280	6.1	270 - 280	3
8	260	3.6	260	3	300	9.1	290 - 310	3	260	15	240 - 270	3	270	27	240 - 300	3
9	260	3.1	250 - 260	3	270	9.8	260 - 280	3	260	19	240 - 280	3	260	11	260 - 280	3
10	260	4.2	250 - 260	3	270	3.2	270 - 280	3	270	9.2	260 - 280	3	270	8.3	260 - 280	3
11	250	5.7	250 - 260	3	250	3.5	250	3	270	8.1	260 - 270	3	280	7.2	270 - 280	3
12	260	7.4	260 - 270	3	270	5.6	260 - 270	3	280	12	270 - 290	3	280	21	270 - 310	3
13	260	4.4	260 - 270	3	270	9.5	260 - 280	3	270	2.5	270 - 270	3	260	3.0	260	3
14	270	2.1	260 - 270	3	260	11	250 - 270	3	250	1.5	250	3	260	4.4	260 - 270	3
15	260	3.5	260 - 270	3	270	6.0	260 - 270	3	250	4.7	250 - 260	3	250	3.2	250 - 260	3
16	270	8.5	260 - 270	3	260	7.0	260 - 270	3	260	4.2	260 - 270	3	260	6.1	250 - 260	3

Daily Chamber Environmental Conditions - Oxygen (%)

Exposure	0 ppm				250 ppm				1000 ppm				4000 ppm			
	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n	Mean	S.D.	Range	n
1	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
2	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
3	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
4	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
5	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
6	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
7	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
8	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
9	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
10	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
11	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
12	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
13	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
14	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
15	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1
16	20	a	20	1	20	a	20	1	20	a	20	1	20	a	20	1

Appendix G

Twelve Component Analysis

TWELVE COMPONENT ANALYSIS

EXPLANATORY NOTES

NOTES:

Volume (%) Supplied by the Sponsor.
Values are reported to 2 significant figures.
Calculations were performed prior to rounding values.

Twelve Component Analysis - 250 ppm Chamber

Date of Analysis: February 21, 2006

Peak	Peak ID	Volume (%)	Theoretical Concentration at 267 ppm	250 ppm Results
1	2-MethylC6+C7-Olefin	4.50	12.0	12.1
2	3-Methylhexane	3.52	9.4	9.9
3	t-1,3-DimethylcyC5	1.45	3.9	4.0
4	t-1,2-DimethylcycloC5	1.61	4.3	4.5
5	n-Heptane	7.23	19.3	19.0
6	Methylcyclohexane	6.76	18.1	17.4
7	Toluene	3.44	9.2	8.9
8	2-Methylheptane	3.25	8.7	7.7
9	n-Octane	5.81	15.5	13.9
10	Ethylcyclohexane	1.95	5.2	4.3
11	m-Xylene	1.71	4.6	4.3
12	n-Nonane	4.47	11.9	10.2

Date of Analysis: March 3, 2006

Peak	Peak ID	Volume (%)	Theoretical Concentration at 247 ppm	250 ppm Results
1	2-MethylC6+C7-Olefin	4.50	11.1	11.5
2	3-Methylhexane	3.52	8.7	9.2
3	t-1,3-DimethylcyC5	1.45	3.6	3.8
4	t-1,2-DimethylcycloC5	1.61	4.0	4.1
5	n-Heptane	7.23	17.9	17.4
6	Methylcyclohexane	6.76	16.7	16.4
7	Toluene	3.44	8.5	8.3
8	2-Methylheptane	3.25	8.0	7.2
9	n-Octane	5.81	14.3	13.0
10	Ethylcyclohexane	1.95	4.8	4.0
11	m-Xylene	1.71	4.2	3.9
12	n-Nonane	4.47	11.1	9.5

Twelve Component Analysis - 4000 ppm Chamber

Date of Analysis: February 22, 2006

Peak	Peak ID	Volume (%)	Theoretical Concentration at 4095 ppm	4000 ppm Results
1	2-MethylC6+C7-Olefin	4.50	184.3	183.5
2	3-Methylhexane	3.52	144.0	141.4
3	t-1,3-DimethylcyC5	1.45	59.4	59.6
4	t-1,2-DimethylcycloC5	1.61	66.1	65.1
5	n-Heptane	7.23	296.1	279.5
6	Methylcyclohexane	6.76	276.9	261.1
7	Toluene	3.44	141.0	133.9
8	2-Methylheptane	3.25	133.2	115.4
9	n-Octane	5.81	237.7	202.7
10	Ethylcyclohexane	1.95	79.9	67.6
11	m-Xylene	1.71	69.9	60.1
12	n-Nonane	4.47	183.2	150.7

Date of Analysis: March 6, 2006

Peak	Peak ID	Volume (%)	Theoretical Concentration at 4044 ppm	4000 ppm Results
1	2-MethylC6+C7-Olefin	4.50	182.0	173.9
2	3-Methylhexane	3.52	142.2	135.1
3	t-1,3-DimethylcyC5	1.45	58.6	56.5
4	t-1,2-DimethylcycloC5	1.61	65.2	62.1
5	n-Heptane	7.23	292.4	265.1
6	Methylcyclohexane	6.76	273.5	247.8
7	Toluene	3.44	139.2	127.0
8	2-Methylheptane	3.25	131.6	109.3
9	n-Octane	5.81	234.8	191.4
10	Ethylcyclohexane	1.95	78.9	64.2
11	m-Xylene	1.71	69.0	57.0
12	n-Nonane	4.47	180.9	141.5

Appendix H
Individual Clinical Observations in Male Rats

Individual Clinical Observations in Male Rats

Group Sex	Animal Number	Clinical Sign	Site	Test Day																
				-5	-3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1m	101	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	102	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	103	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	104	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	105	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Clinical Observations in Male Rats

Group Sex	Animal Number	Clinical Sign	Site	Test Day																
				-5	-3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2m	201	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	202	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	203	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	204	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	205	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Clinical Observations in Male Rats

Group Sex	Animal Number	Clinical Sign	Site	Test Day																
				-5	-3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3m	301	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	302	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	303	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	304	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	305	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Clinical Observations in Male Rats																				
Group	Animal	Clinical Sign	Site	Test Day																
				Sex	Number	-5	-3	1	2	3	4	5	6	7	8	9	10	11	12	13
4m	401	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	402	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	403	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
	404	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	.	.
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X
		Wet fur	Chest	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X
		Wet fur	Face	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X
	405	No Abnormalities Detected		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix I
Individual Maternal Clinical Observations

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				2	4	6	7	8	9	10	11	12
1f	111	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	112	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	113	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	114	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	115	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				13	14	15	16	17	18	19	20	21
1f	111	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	112	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	113	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	114	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	115	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				2	4	6	7	8	9	10	11	12
2f	211	No Abnormalities Detected	Hind quarters left	X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	212	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	213	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Hair loss		.	.	.	.	.	.	.	.	.
	214	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	215	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				13	14	15	16	17	18	19	20	21
2f	211	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	212	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	213	No Abnormalities Detected		X	X	X	.	.	.	.	.	X
		Hair loss	Hind quarters left	.	.	.	X	X	X	X	X	.
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	214	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	215	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				2	4	6	7	8	9	10	11	12
3f	311	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	312	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	313	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	314	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	315	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				13	14	15	16	17	18	19	20	21
3f	311	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	312	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	313	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	314	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	315	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				2	4	6	7	8	9	10	11	12
4f	411	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	412	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
		Stained skin/fur - red	Face	.	.	.	.	.	.	.	.	.
	413	Wet fur	Chest	.	.	.	.	.	.	.	.	.
		No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	.
	414	Stained skin/fur - brown	Nose	.	.	.	.	.	.	.	.	.
		Wet fur	Chin	.	.	.	.	.	.	.	.	.
		No Abnormalities Detected		X	X	X	X	X	X	X	X	X
	415	Scheduled sacrifice		.	.	.	.	.	.	.	.	.
		Salivation		X	X	X	X	X	X	X	X	X
	415	Scheduled sacrifice		.	.	.	.	.	.	.	.	.
		Wet fur	Chest	.	.	.	.	.	.	.	.	.
		Wet fur	Chin	.	.	.	.	.	.	.	.	.

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Clinical Observations

Group Sex	Animal Number	Clinical Sign	Site	Gestation Day								
				13	14	15	16	17	18	19	20	21
4f	411	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	412	No Abnormalities Detected		X	.	.	.	.	.	.	.	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
		Stained skin/fur - red	Face	.	X	X	X	X	X	X	X	.
		Wet fur	Chest	.	X	X	X	X	X	X	X	.
	413	No Abnormalities Detected		X	X	.	.	.	.	.	.	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
		Stained skin/fur - brown	Nose	.	.	X	X	X	X	X	X	.
		Wet fur	Chin	.	.	.	.	.	X	X	X	.
	414	No Abnormalities Detected		X	X	X	X	X	X	X	X	X
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
	415	No Abnormalities Detected		X	X	X	X	X	.	.	.	X
		Salivation		.	.	.	.	.	X	.	.	.
		Scheduled sacrifice		.	.	.	.	.	.	.	.	X
		Wet fur	Chest	.	.	.	.	.	X	X	X	.
		Wet fur	Chin	.	.	.	.	.	X	X	X	.

X = Present

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix J
Individual Body Weights in Male Rats

		Individual Body Weights (grams) in Male Rats								
Group Sex	Animal Number	Test Day								
		-5	-3	1	2	3	4	5	6	7
1m	101	249.2	268.2	302.6	305.7	315.3	318.6	322.6	335.6	342.0
	102	243.9	269.9	310.7	315.0	321.3	331.3	336.4	352.3	354.8
	103	252.7	273.5	305.7	309.2	316.7	321.7	328.7	338.5	342.3
	104	249.8	275.2	310.8	316.8	317.4	330.0	331.9	342.9	343.8
	105	249.8	278.3	329.8	339.1	354.2	356.8	375.8	387.0	394.6
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	249.08	273.02	311.92	317.16	324.98	331.68	339.08	351.26	355.50
	S.D.	3.20	4.06	10.58	13.05	16.49	15.04	21.13	20.95	22.49
	N	5	5	5	5	5	5	5	5	5

		Test Day							
Group Sex	Animal Number	8	9	10	11	12	13	14	15
1m	101	347.8	350.2	361.6	360.4	370.4	376.7	378.5	379.1
	102	359.7	365.5	374.9	374.0	385.2	391.4	400.2	397.1
	103	343.9	350.7	351.7	358.4	363.7	371.0	378.7	376.8
	104	349.2	350.4	357.4	361.3	367.7	377.9	386.1	387.7
	105	398.9	411.3	415.6	424.6	432.0	440.7	451.6	453.9
	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	359.90	365.62	372.24	375.74	383.80	391.54	399.02	398.92
	S.D.	22.57	26.36	25.70	27.99	28.14	28.48	30.69	31.76
	N	5	5	5	5	5	5	5	5

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

		Individual Body Weights (grams) in Male Rats								
Group Sex	Animal Number	Test Day								
		-5	-3	1	2	3	4	5	6	7
2m	201	245.0	267.7	302.0	303.8	309.4	313.4	322.4	331.0	332.0
	202	242.5	271.9	303.8	317.5	315.0	324.6	331.2	340.0	347.7
	203	248.2	274.9	311.9	321.0	326.4	336.3	346.0	352.8	363.0
	204	246.8	269.8	307.4	311.1	317.4	321.7	332.6	335.8	337.1
	205	253.0	278.3	306.7	309.7	310.4	310.9	317.3	324.7	328.0
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	247.10	272.52	306.36	312.62	315.72	321.38	329.90	336.86	341.56
	S.D.	3.93	4.19	3.79	6.76	6.81	10.08	10.99	10.57	14.08
	N	5	5	5	5	5	5	5	5	5

		Test Day							
Group Sex	Animal Number	8	9	10	11	12	13	14	15
2m	201	333.3	341.0	345.0	347.8	355.7	357.7	360.8	360.8
	202	349.5	356.9	364.7	368.0	365.0	371.5	375.9	380.0
	203	367.7	371.4	378.7	384.7	389.2	390.3	395.4	396.9
	204	337.3	340.1	346.3	347.7	352.5	357.4	353.2	354.2
	205	338.8	333.9	344.5	347.4	349.2	340.5	338.5	333.9
	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	345.32	348.66	355.84	359.12	362.32	363.48	364.76	365.16
	S.D.	13.87	15.29	15.31	16.80	16.14	18.59	21.80	24.21
	N	5	5	5	5	5	5	5	5

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Body Weights (grams) in Male Rats										
Group Sex	Animal Number	Test Day								
		-5	-3	1	2	3	4	5	6	7
3m	301	252.4	275.6	308.7	306.8	314.1	321.8	328.2	334.4	338.1
	302	253.6	272.9	308.1	304.6	307.9	318.4	319.4	334.4	335.3
	303	246.3	270.9	296.8	303.2	306.5	317.6	324.0	333.3	338.7
	304	255.3	278.0	313.5	314.4	322.6	327.6	331.7	342.4	354.1
	305	244.3	267.4	294.9	310.4	311.3	325.2	268.0a	338.5	344.6
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	250.38	272.96	304.40	307.88	312.48	322.12	314.26	336.60	342.16
	S.D.	4.80	4.11	8.11	4.55	6.39	4.30	26.27	3.80	7.48
	N	5	5	5	5	5	5	5	5	5

Group Sex	Animal Number	Test Day							
		8	9	10	11	12	13	14	15
3m	301	345.6	345.3	353.4	361.0	375.6	375.7	376.7	376.5
	302	335.2	333.9	347.9	346.5	347.9	355.0	357.7	356.4
	303	340.5	341.7	346.6	347.1	356.4	351.9	340.9	340.9
	304	362.3	358.9	363.3	373.7	374.5	379.0	386.9	384.8
	305	346.7	347.5	351.2	356.1	359.6	360.9	355.1	362.6
	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	346.06	345.46	352.48	356.88	362.80	364.50	363.46	364.24
	S.D.	10.16	9.12	6.62	11.22	11.98	12.22	18.28	17.19
	N	5	5	5	5	5	5	5	5

a = Weighing error occurred on day 5; data excluded from statistics.

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

		Individual Body Weights (grams) in Male Rats								
Group Sex	Animal Number	Test Day								
		-5	-3	1	2	3	4	5	6	7
4m	401	248.5	278.9	321.0	313.2	317.4	318.7	289.7	330.8	335.6
	402	243.9	269.1	303.1	298.5	288.6	288.4	302.1	296.1	307.4
	403	251.4	274.8	300.9	299.6	298.6	298.0	308.5	312.3	314.4
	404	241.2	273.6	317.6	306.7	306.9	307.1	297.1	324.2	330.8
	405	244.0	266.9	298.1	288.1	293.6	300.0	247.3a	309.6	310.4
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	245.80	272.66	308.14	301.22	301.02	302.44	288.94	314.60	319.72
	S.D.	4.08	4.75	10.41	9.43	11.38	11.28	24.27	13.48	12.67
	N	5	5	5	5	5	5	5	5	5

		Test Day							
Group Sex	Animal Number	8	9	10	11	12	13	14	15
4m	401	341.9	345.6	348.1	349.6	357.3	361.6	369.7	370.4
	402	308.1	310.0	313.8	315.7	320.6	324.6	333.3	337.1
	403	325.3	319.4	330.3	337.7	337.9	344.9	347.7	340.1
	404	339.4	337.4	343.7	347.7	346.3	352.2	357.1	359.8
	405	311.4	315.0	315.1	324.3	323.2	330.1	334.8	331.2
	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	325.22	325.48	330.20	335.00	337.06	342.68	348.52	347.72
	S.D.	15.52	15.28	15.81	14.74	15.48	15.32	15.35	16.61
	N	5	5	5	5	5	5	5	5

a = Weighing error occurred on day 5; data excluded from statistics.

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix K
Individual Body Weight Gains in Male Rats

Individual Body Weight Gains (grams) in Male Rats

Group Sex	Animal Number	Base Weight Day 1	Test Day										
			From: To:	-5 -3	-3 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
1m	101	302.6		19.0	34.4	3.1	9.6	3.3	4.0	13.0	6.4	5.8	2.4
	102	310.7		26.0	40.8	4.3	6.3	10.0	5.1	15.9	2.5	4.9	5.8
	103	305.7		20.8	32.2	3.5	7.5	5.0	7.0	9.8	3.8	1.6	6.8
	104	310.8		25.4	35.6	6.0	0.6	12.6	1.9	11.0	0.9	5.4	1.2
	105	329.8		28.5	51.5	9.3	15.1	2.6	19.0	11.2	7.6	4.3	12.4
	Mean	311.92		23.94	38.90	5.24	7.82	6.70	7.40	12.18	4.24	4.40	5.72
	S.D.	10.58		3.92	7.72	2.53	5.26	4.39	6.74	2.37	2.75	1.66	4.39
	N	5		5	5	5	5	5	5	5	5	5	5

Group Sex	Animal Number	Base Weight Day 1	From: To:							Abs Gain	% Gain
				9 10	10 11	11 12	12 13	13 14	14 15	1 15	1 15
1m	101	302.6		11.4	-1.2	10.0	6.3	1.8	0.6	76.5	25.281
	102	310.7		9.4	-0.9	11.2	6.2	8.8	-3.1	86.4	27.808
	103	305.7		1.0	6.7	5.3	7.3	7.7	-1.9	71.1	23.258
	104	310.8		7.0	3.9	6.4	10.2	8.2	1.6	76.9	24.743
	105	329.8		4.3	9.0	7.4	8.7	10.9	2.3	124.1	37.629
	Mean	311.92		6.62	3.50	8.06	7.74	7.48	-0.10	87.00	27.744
	S.D.	10.58		4.11	4.53	2.47	1.70	3.40	2.31	21.46	5.764
	N	5		5	5	5	5	5	5	5	5

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Body Weight Gains (grams) in Male Rats

Group Sex	Animal Number	Base Weight Day 1	Test Day										
			From: To:	-5 -3	-3 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
2m	201	302.0		22.7	34.3	1.8	5.6	4.0	9.0	8.6	1.0	1.3	7.7
	202	303.8		29.4	31.9	13.7	-2.5	9.6	6.6	8.8	7.7	1.8	7.4
	203	311.9		26.7	37.0	9.1	5.4	9.9	9.7	6.8	10.2	4.7	3.7
	204	307.4		23.0	37.6	3.7	6.3	4.3	10.9	3.2	1.3	0.2	2.8
	205	306.7		25.3	28.4	3.0	0.7	0.5	6.4	7.4	3.3	10.8	-4.9
	Mean	306.36		25.42	33.84	6.26	3.10	5.66	8.52	6.96	4.70	3.76	3.34
	S.D.	3.79		2.77	3.80	5.01	3.84	4.02	1.97	2.26	4.08	4.27	5.09
	N	5		5	5	5	5	5	5	5	5	5	5

Group Sex	Animal Number	Base Weight Day 1	From: To:							Abs Gain	% Gain
				9 10	10 11	11 12	12 13	13 14	14 15	1 15	1 15
2m	201	302.0		4.0	2.8	7.9	2.0	3.1	0.0	58.8	19.470
	202	303.8		7.8	3.3	-3.0	6.5	4.4	4.1	76.2	25.082
	203	311.9		7.3	6.0	4.5	1.1	5.1	1.5	85.0	27.252
	204	307.4		6.2	1.4	4.8	4.9	-4.2	1.0	46.8	15.224
	205	306.7		10.6	2.9	1.8	-8.7	-2.0	-4.6	27.2	8.869
	Mean	306.36		7.18	3.28	3.20	1.16	1.28	0.40	58.80	19.180
	S.D.	3.79		2.41	1.68	4.08	5.93	4.14	3.18	23.09	7.451
	N	5		5	5	5	5	5	5	5	5

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Body Weight Gains (grams) in Male Rats

Group Sex	Animal Number	Base Weight Day 1	Test Day										
			From: To:	-5 -3	-3 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
3m	301	308.7		23.2	33.1	-1.9	7.3	7.7	6.4	6.2	3.7	7.5	-0.3
	302	308.1		19.3	35.2	-3.5	3.3	10.5	1.0	15.0	0.9	-0.1	-1.3
	303	296.8		24.6	25.9	6.4	3.3	11.1	6.4	9.3	5.4	1.8	1.2
	304	313.5		22.7	35.5	0.9	8.2	5.0	4.1	10.7	11.7	8.2	-3.4
	305	294.9		23.1	27.5	15.5	0.9	13.9	-57.2a	70.5a	6.1	2.1	0.8
	Mean	304.40		22.58	31.44	3.48	4.60	9.64	-7.86	22.34	5.56	3.90	-0.60
	S.D.	8.11		1.97	4.46	7.70	3.05	3.40	27.67	27.11	3.97	3.71	1.85
	N	5		5	5	5	5	5	5	5	5	5	5

Group Sex	Animal Number	Base Weight Day 1	From: To:							Abs Gain 1 15	% Gain 1 15
				9 10	10 11	11 12	12 13	13 14	14 15		
3m	301	308.7		8.1	7.6	14.6	0.1	1.0	-0.2	67.8	21.963
	302	308.1		14.0	-1.4	1.4	7.1	2.7	-1.3	48.3	15.677
	303	296.8		4.9	0.5	9.3	-4.5	-11.0	0.0	44.1	14.858
	304	313.5		4.4	10.4	0.8	4.5	7.9	-2.1	71.3	22.743
	305	294.9		3.7	4.9	3.5	1.3	-5.8	7.5	67.7	22.957
	Mean	304.40		7.02	4.40	5.92	1.70	-1.04	0.78	59.84	19.640
	S.D.	8.11		4.25	4.88	5.90	4.42	7.42	3.85	12.62	4.019
	N	5		5	5	5	5	5	5	5	5

a = Weighing error occurred on day 5; data excluded from statistics.

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Body Weight Gains (grams) in Male Rats

Group Sex	Animal Number	Base Weight Day 1	Test Day										
			From: To:	-5 -3	-3 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
4m	401	321.0		30.4	42.1	-7.8	4.2	1.3	-29.0	41.1	4.8	6.3	3.7
	402	303.1		25.2	34.0	-4.6	-9.9	-0.2	13.7	-6.0	11.3	0.7	1.9
	403	300.9		23.4	26.1	-1.3	-1.0	-0.6	10.5	3.8	2.1	10.9	-5.9
	404	317.6		32.4	44.0	-10.9	0.2	0.2	-10.0	27.1	6.6	8.6	-2.0
	405	298.1		22.9	31.2	-10.0	5.5	6.4	-52.7a	62.3a	0.8	1.0	3.6
		-----		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean	308.14		26.86	35.48	-6.92	-0.20	1.42	-13.50	25.66	5.12	5.50	0.26
	S.D.	10.41		4.29	7.50	3.97	6.06	2.87	27.86	27.67	4.13	4.55	4.15
	N	5		5	5	5	5	5	5	5	5	5	5
		-----		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Group Sex	Animal Number	Base Weight Day 1	From: To:							Abs Gain 1 15	% Gain 1 15
				9 10	10 11	11 12	12 13	13 14	14 15		
4m	401	321.0		2.5	1.5	7.7	4.3	8.1	0.7	49.4	15.389
	402	303.1		3.8	1.9	4.9	4.0	8.7	3.8	34.0	11.217
	403	300.9		10.9	7.4	0.2	7.0	2.8	-7.6	39.2	13.028
	404	317.6		6.3	4.0	-1.4	5.9	4.9	2.7	42.2	13.287
	405	298.1		0.1	9.2	-1.1	6.9	4.7	-3.6	33.1	11.104
		-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean	308.14		4.72	4.80	2.06	5.62	5.84	-0.80	39.58	12.805
	S.D.	10.41		4.12	3.39	4.04	1.41	2.49	4.74	6.64	1.759
	N	5		5	5	5	5	5	5	5	5
		-----		-----	-----	-----	-----	-----	-----	-----	-----

a = Weighing error occurred on day 5; data excluded from statistics.

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix L
Individual Maternal Body Weights

Group Sex	Animal Number	Pregnancy Outcome	Individual Maternal Body Weights (grams) Gestation Day							
			6	7	8	9	10	11	12	13
1f	111	PC	251.9	251.1	253.5	259.2	271.0	281.2	280.0	290.1
	112	PC	254.6	258.1	261.2	270.8	280.4	286.3	292.4	303.1
	113	PC	251.4	246.9	261.2	260.1	273.6	273.9	288.9	295.0
	114	PC	228.8	230.7	233.5	233.3	247.1	254.9	263.0	261.5
	115	PC	252.0	253.7	260.8	263.5	279.9	280.1	292.9	302.4
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		247.74	248.10	254.04	257.38	270.40	275.28	283.44	290.42
	S.D.		10.66	10.54	11.94	14.21	13.64	12.22	12.54	17.04
	N		5	5	5	5	5	5	5	5
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			14	15	16	17	18	19	20	21
1f	111	PC	298.9	303.8	319.6	331.1	345.0	358.3	377.0	388.9
	112	PC	312.8	319.1	333.7	343.8	365.0	375.0	395.2	417.4
	113	PC	296.2	308.5	312.1	331.6	342.7	355.7	368.7	387.4
	114	PC	269.6	279.0	295.4	308.9	326.4	338.6	355.3	376.4
	115	PC	307.7	315.5	331.0	340.2	362.1	379.5	386.6	422.6
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		297.04	305.18	318.36	331.12	348.24	361.42	376.56	398.54
	S.D.		16.73	15.80	15.52	13.58	15.74	16.39	15.51	20.26
	N		5	5	5	5	5	5	5	5

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weights (grams)										
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			6	7	8	9	10	11	12	13
2f	211	PC	245.5	250.0	260.8	259.1	279.6	283.0	282.7	286.2
	212	PC	251.8	250.9	258.3	264.4	272.4	283.1	291.8	296.1
	213	PC	257.6	258.5	266.6	269.4	283.6	288.9	294.4	298.6
	214	PC	231.4	236.8	242.9	250.8	254.0	268.8	269.0	276.5
	215	PC	247.8	249.2	260.9	267.1	275.4	274.6	278.3	288.2
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		246.82	249.08	257.90	262.16	273.00	279.68	283.24	289.12
	S.D.		9.77	7.81	8.92	7.42	11.44	7.94	10.31	8.76
	N		5	5	5	5	5	5	5	5
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			14	15	16	17	18	19	20	21
2f	211	PC	300.2	305.3	318.3	326.0	343.0	351.3	366.3	385.4
	212	PC	305.5	312.0	323.1	333.4	351.9	364.0	382.3	396.7
	213	PC	304.6	310.1	318.6	332.9	351.5	368.8	378.6	392.1
	214	PC	288.9	291.9	304.9	319.0	334.4	353.4	370.8	392.5
	215	PC	295.2	300.5	309.2	323.3	340.7	353.9	374.9	396.0
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		298.88	303.96	314.82	326.92	344.30	358.28	374.58	392.54
	S.D.		6.92	8.09	7.50	6.21	7.45	7.67	6.30	4.48
	N		5	5	5	5	5	5	5	5

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weights (grams)										
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			6	7	8	9	10	11	12	13
3f	311	PC	250.2	248.2	253.5	268.8	283.0	289.9	295.0	301.4
	312	PC	254.9	253.0	260.3	272.0	275.4	283.5	295.9	295.2
	313	PC	246.9	255.9	263.5	261.3	282.1	287.4	292.1	303.6
	314	PC	243.2	247.7	251.3	245.5	270.3	278.0	288.3	291.4
	315	PC	228.6	226.0	239.5	320.7a	255.1	261.4	268.8	269.8
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		244.76	246.16	253.62	273.66	273.18	280.04	288.02	292.28
	S.D.		10.01	11.78	9.31	28.22	11.36	11.35	11.15	13.47
	N		5	5	5	5	5	5	5	5
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			14	15	16	17	18	19	20	21
3f	311	PC	314.4	312.3	329.7	346.7	358.8	376.7	388.8	407.4
	312	PC	305.2	315.4	328.1	337.2	356.4	371.8	388.2	409.1
	313	PC	308.1	315.9	327.0	338.4	356.0	370.5	389.0	407.3
	314	PC	296.1	305.7	320.7	339.3	352.2	365.6	383.4	406.5
	315	PC	273.8	280.5	295.8	308.5	328.8	339.7	344.7	372.4
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		299.52	305.96	320.26	334.02	350.44	364.86	378.82	400.54
	S.D.		15.82	14.80	14.09	14.74	12.33	14.61	19.21	15.76
	N		5	5	5	5	5	5	5	5

a = Weighing error occurred on gestation day 9; data excluded from statistics.

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weights (grams)										
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			6	7	8	9	10	11	12	13
4f	411	PC	242.9	238.5	242.2	245.4	251.1	259.1	263.0	263.8
	412	PC	244.1	237.4	239.3	247.5	253.5	257.0	259.8	263.0
	413	PC	265.0	236.5	249.9	246.9	258.3	265.0	280.8	265.3
	414	PC	231.6	224.7	231.5	234.3	239.2	247.2	255.4	229.2
	415	PC	238.0	225.4	235.1	232.8	241.5	243.9	250.9	250.7
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		244.32	232.50	239.60	241.38	248.72	254.44	261.98	254.40
	S.D.		12.56	6.84	7.05	7.21	8.11	8.71	11.47	15.25
	N		5	5	5	5	5	5	5	5
Group Sex	Animal Number	Pregnancy Outcome	Gestation Day							
			14	15	16	17	18	19	20	21
4f	411	PC	270.0	277.2	286.8	299.1	317.0	328.8	340.8	357.2
	412	PC	263.4	274.9	277.9	289.5	299.9	312.5	324.1	336.5
	413	PC	270.4	281.5	291.2	302.8	321.6	338.0	355.6	364.6
	414	PC	259.9	267.5	274.6	283.9	300.3	309.1	325.4	344.7
	415	PC	253.0	261.3	271.0	280.3	296.8	304.1	315.9	331.9
	-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		263.34	272.48	280.30	291.12	307.12	318.50	332.36	346.98
	S.D.		7.30	8.05	8.45	9.64	11.32	14.30	15.80	13.76
	N		5	5	5	5	5	5	5	5

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix M
Individual Maternal Body Weight Gains

Individual Maternal Body Weight Gains (grams)													
Group Sex	Animal Number	Pregnancy Outcome	Base Weight Day 6	Gestation Day									
				From: To:	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15
1f	111	PC	251.9		-0.8	2.4	5.7	11.8	10.2	-1.2	10.1	8.8	4.9
	112	PC	254.6		3.5	3.1	9.6	9.6	5.9	6.1	10.7	9.7	6.3
	113	PC	251.4		-4.5	14.3	-1.1	13.5	0.3	15.0	6.1	1.2	12.3
	114	PC	228.8		1.9	2.8	-0.2	13.8	7.8	8.1	-1.5	8.1	9.4
	115	PC	252.0		1.7	7.1	2.7	16.4	0.2	12.8	9.5	5.3	7.8
			-----		-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean		247.74		0.36	5.94	3.34	13.02	4.88	8.16	6.98	6.62	8.14
	S.D.		10.66		3.12	5.04	4.40	2.52	4.49	6.33	5.06	3.45	2.87
	N		5		5	5	5	5	5	5	5	5	5
			-----		-----	-----	-----	-----	-----	-----	-----	-----	-----

Group Sex	Animal Number	Pregnancy Outcome	Base Weight Day 6	From: To:							Abs Gain	% Gain
					15 16	16 17	17 18	18 19	19 20	20 21	6 21	6 21
1f	111	PC	251.9		15.8	11.5	13.9	13.3	18.7	11.9	137.0	54.387
	112	PC	254.6		14.6	10.1	21.2	10.0	20.2	22.2	162.8	63.943
	113	PC	251.4		3.6	19.5	11.1	13.0	13.0	18.7	136.0	54.097
	114	PC	228.8		16.4	13.5	17.5	12.2	16.7	21.1	147.6	64.510
	115	PC	252.0		15.5	9.2	21.9	17.4	7.1	36.0	170.6	67.698
			-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		247.74		13.18	12.76	17.12	13.18	15.14	21.98	150.80	60.927
	S.D.		10.66		5.39	4.10	4.64	2.69	5.24	8.80	15.46	6.269
	N		5		5	5	5	5	5	5	5	5
			-----		-----	-----	-----	-----	-----	-----	-----	-----

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weight Gains (grams)													
Gestation Day													
Group	Animal	Pregnancy	Base	From:	6	7	8	9	10	11	12	13	14
Sex	Number	Outcome	Weight	To:	7	8	9	10	11	12	13	14	15
2f	211	PC	245.5		4.5	10.8	-1.7	20.5	3.4	-0.3	3.5	14.0	5.1
	212	PC	251.8		-0.9	7.4	6.1	8.0	10.7	8.7	4.3	9.4	6.5
	213	PC	257.6		0.9	8.1	2.8	14.2	5.3	5.5	4.2	6.0	5.5
	214	PC	231.4		5.4	6.1	7.9	3.2	14.8	0.2	7.5	12.4	3.0
	215	PC	247.8		1.4	11.7	6.2	8.3	-0.8	3.7	9.9	7.0	5.3
	Mean		246.82		2.26	8.82	4.26	10.84	6.68	3.56	5.88	9.76	5.08
	S.D.		9.77		2.62	2.35	3.81	6.66	6.14	3.75	2.73	3.42	1.28
	N		5		5	5	5	5	5	5	5	5	5

Group	Animal	Pregnancy	Base	From:	15	16	17	18	19	20	Abs	%
Sex	Number	Outcome	Weight	To:	16	17	18	19	20	21	Gain	Gain
2f	211	PC	245.5		13.0	7.7	17.0	8.3	15.0	19.1	139.9	56.986
	212	PC	251.8		11.1	10.3	18.5	12.1	18.3	14.4	144.9	57.546
	213	PC	257.6		8.5	14.3	18.6	17.3	9.8	13.5	134.5	52.213
	214	PC	231.4		13.0	14.1	15.4	19.0	17.4	21.7	161.1	69.620
	215	PC	247.8		8.7	14.1	17.4	13.2	21.0	21.1	148.2	59.806
	Mean		246.82		10.86	12.10	17.38	13.98	16.30	17.96	145.72	59.234
	S.D.		9.77		2.21	2.98	1.30	4.26	4.22	3.80	10.04	6.430
	N		5		5	5	5	5	5	5	5	5

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weight Gains (grams)													
Gestation Day													
Group	Animal	Pregnancy	Base	From:	6	7	8	9	10	11	12	13	14
Sex	Number	Outcome	Weight	To:	7	8	9	10	11	12	13	14	15
3f	311	PC	250.2		-2.0	5.3	15.3	14.2	6.9	5.1	6.4	13.0	-2.1
	312	PC	254.9		-1.9	7.3	11.7	3.4	8.1	12.4	-0.7	10.0	10.2
	313	PC	246.9		9.0	7.6	-2.2	20.8	5.3	4.7	11.5	4.5	7.8
	314	PC	243.2		4.5	3.6	-5.8	24.8	7.7	10.3	3.1	4.7	9.6
	315	PC	228.6		-2.6	13.5	81.2a	-65.6a	6.3	7.4	1.0	4.0	6.7
			-----		-----	-----	-----	-----	-----	-----	-----	-----	-----
	Mean		244.76		1.40	7.46	20.04	-0.48	6.86	7.98	4.26	7.24	6.44
	S.D.		10.01		5.14	3.74	35.34	37.29	1.12	3.33	4.84	4.04	4.97
	N		5		5	5	5	5	5	5	5	5	5
			-----		-----	-----	-----	-----	-----	-----	-----	-----	-----

Group	Animal	Pregnancy	Base	From:	15	16	17	18	19	20	Abs	%
Sex	Number	Outcome	Weight	To:	16	17	18	19	20	21	Gain	Gain
3f	311	PC	250.2		17.4	17.0	12.1	17.9	12.1	18.6	157.2	62.830
	312	PC	254.9		12.7	9.1	19.2	15.4	16.4	20.9	154.2	60.494
	313	PC	246.9		11.1	11.4	17.6	14.5	18.5	18.3	160.4	64.966
	314	PC	243.2		15.0	18.6	12.9	13.4	17.8	23.1	163.3	67.146
	315	PC	228.6		15.3	12.7	20.3	10.9	5.0	27.7	143.8	62.905
			-----		-----	-----	-----	-----	-----	-----	-----	-----
	Mean		244.76		14.30	13.76	16.42	14.42	13.96	21.72	155.78	63.668
	S.D.		10.01		2.44	3.95	3.72	2.57	5.59	3.87	7.52	2.507
	N		5		5	5	5	5	5	5	5	5
			-----		-----	-----	-----	-----	-----	-----	-----	-----

a = Weighing error occurred on gestation day 9; data excluded from statistics.

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Body Weight Gains (grams)													
Gestation Day													
Group	Animal	Pregnancy	Base	From:	6	7	8	9	10	11	12	13	14
Sex	Number	Outcome	Weight	To:	7	8	9	10	11	12	13	14	15
4f	411	PC	242.9		-4.4	3.7	3.2	5.7	8.0	3.9	0.8	6.2	7.2
	412	PC	244.1		-6.7	1.9	8.2	6.0	3.5	2.8	3.2	0.4	11.5
	413	PC	265.0		-28.5	13.4	-3.0	11.4	6.7	15.8	-15.5	5.1	11.1
	414	PC	231.6		-6.9	6.8	2.8	4.9	8.0	8.2	-26.2	30.7	7.6
	415	PC	238.0		-12.6	9.7	-2.3	8.7	2.4	7.0	-0.2	2.3	8.3
	Mean		244.32		-11.82	7.10	1.78	7.34	5.72	7.54	-7.58	8.94	9.14
	S.D.		12.56		9.80	4.61	4.58	2.68	2.61	5.12	12.75	12.38	2.02
	N		5		5	5	5	5	5	5	5	5	5

Group	Animal	Pregnancy	Base	From:	15	16	17	18	19	20	Abs	%
Sex	Number	Outcome	Weight	To:	16	17	18	19	20	21	Gain	Gain
4f	411	PC	242.9		9.6	12.3	17.9	11.8	12.0	16.4	114.3	47.056
	412	PC	244.1		3.0	11.6	10.4	12.6	11.6	12.4	92.4	37.853
	413	PC	265.0		9.7	11.6	18.8	16.4	17.6	9.0	99.6	37.585
	414	PC	231.6		7.1	9.3	16.4	8.8	16.3	19.3	113.1	48.834
	415	PC	238.0		9.7	9.3	16.5	7.3	11.8	16.0	93.9	39.454
	Mean		244.32		7.82	10.82	16.00	11.38	13.86	14.62	102.66	42.157
	S.D.		12.56		2.91	1.42	3.29	3.54	2.86	3.98	10.44	5.369
	N		5		5	5	5	5	5	5	5	5

= Animal not pregnant and has been excluded from statistics

PC = Pregnant Caesarian, PL = Pregnant Littered, NP = Not Pregnant, ND = Not Determined

Abs Gain = absolute bodyweight gain between base period and end of the analysis period

% Gain = percentage bodyweight gain between base period and end of the analysis period

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix N
Individual Maternal Net Body Weight And Body Weight Change

Individual Maternal Net Body Weight and Body Weight Change

Group: 1 0 ppm

Dam Number	Pregnancy Status	Pregnancy Type	Gravid Uterus g	Terminal Body Wt g	Net BW g	BDWT Change From Day 6 g	NetBDWT Change From Day 6 g
111	P	Preg	98.95	388.9	289.95	137.0	38.05
112	P	Preg	108.71	417.4	308.69	162.8	54.09
113	P	Preg	89.20	387.4	298.20	136.0	46.80
114	P	Preg	87.54	376.4	288.86	147.6	60.06
115	P	Preg	96.05	422.6	326.55	170.6	74.55
-----	-----	-----	-----	-----	-----	-----	-----
MEAN			96.090	398.54	302.450	150.80	54.710
S.D.			8.486	20.26	15.642	15.46	13.809
N			5	5	5	5	5

= Animal has been excluded from means and statistics; E = Excluded by user
Pregnancy Status Codes: P = Pregnant; NP = Not Pregnant
Pregnancy Type Codes: Preg = Pregnant
Gravid Uterus Gravid Uterus Wt.
Net BW Corrected Bodyweight
BDWT Change Bodyweight Change
Terminal Body Wt Terminal Body Weight

Individual Maternal Net Body Weight and Body Weight Change

Group: 2 250 ppm

Dam Number	Pregnancy Status	Pregnancy Type	Gravid Uterus g	Terminal Body Wt g	Net BW g	BDWT Change From Day 6 g	NetBDWT Change From Day 6 g
211	P	Preg	86.23	385.4	299.17	139.9	53.67
212	P	Preg	107.07	396.7	289.63	144.9	37.83
213	P	Preg	91.60	392.1	300.50	134.5	42.90
214	P	Preg	105.35	392.5	287.15	161.1	55.75
215	P	Preg	97.35	396.0	298.65	148.2	50.85
-----	-----	-----	-----	-----	-----	-----	-----
MEAN			97.520	392.54	295.020	145.72	48.200
S.D.			8.875	4.48	6.153	10.04	7.576
N			5	5	5	5	5

= Animal has been excluded from means and statistics; E = Excluded by user
Pregnancy Status Codes: P = Pregnant; NP = Not Pregnant
Pregnancy Type Codes: Preg = Pregnant
Gravid Uterus Gravid Uterus Wt.
Net BW Corrected Bodyweight
BDWT Change Bodyweight Change
Terminal Body Wt Terminal Body Weight

Individual Maternal Net Body Weight and Body Weight Change

Group: 3 1000 ppm

Dam Number	Pregnancy Status	Pregnancy Type	Gravid Uterus g	Terminal Body Wt g	Net BW g	BDWT Change From Day 6 g	NetBDWT Change From Day 6 g
311	P	Preg	89.93	407.4	317.47	157.2	67.27
312	P	Preg	102.19	409.1	306.91	154.2	52.01
313	P	Preg	106.41	407.3	300.89	160.4	53.99
314	P	Preg	110.42	406.5	296.08	163.3	52.88
315	P	Preg	90.32	372.4	282.08	143.8	53.48
-----	-----	-----	-----	-----	-----	-----	-----
MEAN			99.854	400.54	300.686	155.78	55.926
S.D.			9.347	15.76	13.114	7.52	6.384
N			5	5	5	5	5

= Animal has been excluded from means and statistics; E = Excluded by user
Pregnancy Status Codes: P = Pregnant; NP = Not Pregnant
Pregnancy Type Codes: Preg = Pregnant
Gravid Uterus Gravid Uterus Wt.
Net BW Corrected Bodyweight
BDWT Change Bodyweight Change
Terminal Body Wt Terminal Body Weight

Individual Maternal Net Body Weight and Body Weight Change

Group: 4 4000 ppm

Dam Number	Pregnancy Status	Pregnancy Type	Gravid Uterus g	Terminal Body Wt g	Net BW g	BDWT Change From Day 6 g	NetBDWT Change From Day 6 g
411	P	Preg	81.58	357.2	275.62	114.3	32.72
412	P	Preg	73.87	336.5	262.63	92.4	18.53
413	P	Preg	90.94	364.6	273.66	99.6	8.66
414	P	Preg	89.07	344.7	255.63	113.1	24.03
415	P	Preg	81.84	331.9	250.06	93.9	12.06
-----	-----	-----	-----	-----	-----	-----	-----
MEAN			83.460	346.98	263.520	102.66	19.200
S.D.			6.811	13.76	11.107	10.44	9.600
N			5	5	5	5	5

= Animal has been excluded from means and statistics; E = Excluded by user
Pregnancy Status Codes: P = Pregnant; NP = Not Pregnant
Pregnancy Type Codes: Preg = Pregnant
Gravid Uterus Gravid Uterus Wt.
Net BW Corrected Bodyweight
BDWT Change Bodyweight Change
Terminal Body Wt Terminal Body Weight

Appendix O
Individual Food Consumption By Male Rats

Individual Food Consumption (grams/day) By Male Rats										
Group Sex	Animal Number	From: To:	Test Day							
			1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
1m	101		24.40	33.00	25.50	26.80	31.10	25.10	31.00	28.50
	102		30.30	31.00	33.70	34.20	35.80	30.40	34.00	35.40
	103		26.30	31.10	28.40	30.90	30.10	27.70	28.30	32.90
	104		29.80	27.40	32.90	27.00	30.60	24.60	28.20	30.40
	105		31.40	40.30	33.50	41.30	37.30	35.90	36.10	39.10
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	28.500	32.700	30.900	32.100	33.000	28.800	31.500	33.300
		S.D.	3.000	4.800	3.600	6.000	3.300	4.500	3.600	4.200
		N	5	5	5	5	5	5	5	5
		-----	-----	-----	-----	-----	-----	-----	-----	-----
Group Sex	Animal Number							Total		
		9 10	10 11	11 12	12 13	13 14	14 15	1 15		
1m	101	30.90	24.90	30.80	28.60	27.20	24.90	392.700		
	102	33.40	32.10	34.60	30.50	31.80	30.80	458.000		
	103	24.60	31.00	28.10	30.80	28.60	30.70	409.500		
	104	26.70	27.40	31.80	30.10	29.90	32.20	409.000		
	105	33.00	37.80	37.70	36.40	36.50	36.70	513.000		
	-----	-----	-----	-----	-----	-----	-----	-----		
		29.700	30.600	32.700	31.200	30.900	31.200	436.440		
		3.900	4.800	3.600	3.000	3.600	4.200	49.290		
		5	5	5	5	5	5	5		
		-----	-----	-----	-----	-----	-----	-----		

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Food Consumption (grams/day) By Male Rats										
Group Sex	Animal Number	From: To:	Test Day							
			1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
2m	201		29.50	29.30	29.50	33.30	30.10	28.80	27.00	29.10
	202		29.10	27.40	30.10	31.00	33.00	30.40	32.60	33.40
	203		28.90	33.50	32.70	35.50	33.10	31.40	33.90	31.40
	204		21.50	27.30	28.90	31.30	25.40	27.50	29.40	29.20
	205		30.20	25.10	25.00	28.10	30.30	26.40	35.60	28.10
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	27.900	28.500	29.100	31.800	30.300	28.800	31.800	30.300
		S.D.	3.600	3.300	2.700	2.700	3.000	2.100	3.600	2.100
		N	5	5	5	5	5	5	5	5
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
2m	Animal Number	9 10	10 11	11 12	12 13	13 14	14 15	Total 1 15		
	201	30.40	28.00	31.50	27.10	27.30	26.40	407.300		
	202	33.70	29.70	27.90	29.70	29.00	29.00	426.000		
	203	31.10	31.20	30.20	29.30	32.40	29.70	444.300		
	204	29.40	24.40	28.10	25.50	22.80	26.40	377.100		
	205	27.90	27.60	28.70	24.20	10.10	19.50	366.800		
	-----	-----	-----	-----	-----	-----	-----	-----		
		30.600	28.200	29.400	27.300	24.300	26.100	404.300		
		2.100	2.700	1.500	2.400	8.700	3.900	32.504		
		5	5	5	5	5	5	5		
	-----	-----	-----	-----	-----	-----	-----	-----		

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Food Consumption (grams/day) By Male Rats

Group Sex	Animal Number	From: To:	Test Day							
			1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
3m	301		23.40	26.80	28.00	27.80	26.60	26.20	28.50	26.70
	302		25.00	30.60	20.00	25.30	32.00	26.70	28.60	25.70
	303		24.70	24.70	29.70	27.40	28.70	25.20	25.30	26.50
	304		27.70	29.00	28.00	26.30	30.00	33.00	31.00	30.30
	305		29.80	28.00	28.10	30.70	28.10	28.50	31.80	28.10
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	26.100	27.900	26.700	27.600	29.100	27.900	29.100	27.600
		S.D.	2.700	2.100	3.900	2.100	2.100	3.000	2.400	1.800
		N	5	5	5	5	5	5	5	5
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----

Group Sex	Animal Number							Total
		9 10	10 11	11 12	12 13	13 14	14 15	1 15
3m	301	25.60	30.30	31.20	28.90	27.10	29.00	386.100
	302	33.50	24.20	29.20	27.50	26.80	27.70	382.800
	303	24.10	25.50	27.50	24.50	14.90	22.60	351.300
	304	27.00	30.60	29.40	28.40	28.80	30.50	410.000
	305	24.70	28.80	27.50	26.50	23.60	27.20	391.400
	-----	-----	-----	-----	-----	-----	-----	-----
		27.000	27.900	29.100	27.300	24.300	27.300	384.320
		3.900	3.000	1.500	1.800	5.400	3.000	21.245
		5	5	5	5	5	5	5
	-----	-----	-----	-----	-----	-----	-----	-----

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Food Consumption (grams/day) By Male Rats										
Group Sex	Animal Number	From: To:	Test Day							
			1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9
4m	401		21.10	25.10	25.20	23.70	26.10	26.20	28.10	28.70
	402		21.40	15.60	18.50	20.70	23.00	26.20	23.60	25.30
	403		23.60	20.80	20.10	23.60	26.40	25.60	29.00	28.20
	404		21.40	26.60	26.30	27.10	28.80	30.50	27.80	27.70
	405		17.30	25.50	26.20	24.20	30.80	25.20	24.70	27.50
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	21.000	22.800	23.400	24.000	27.000	26.700	26.700	27.600
		S.D.	2.400	4.500	3.600	2.400	3.000	2.100	2.400	1.200
		N	5	5	5	5	5	5	5	5
		-----	----	-----	-----	-----	-----	-----	-----	-----
Group Sex	Animal Number	9	10	11	12	13	14	Total		
		10	11	12	13	14	15	1	15	
4m	401	22.90	25.40	26.60	23.60	28.40	28.60	359.700		
	402	21.80	24.20	25.80	21.70	26.30	27.70	321.800		
	403	27.70	27.50	26.00	27.00	27.70	24.80	358.000		
	404	27.90	27.70	25.50	27.70	23.30	29.90	378.200		
	405	20.60	29.70	24.90	28.90	27.30	24.20	357.000		
	-----	-----	-----	-----	-----	-----	-----	-----		
		24.300	27.000	25.800	25.800	26.700	27.000	354.940		
	3.300	2.100	0.600	3.000	2.100	2.400	20.467			
	5	5	5	5	5	5	5			
	-----	-----	-----	-----	-----	-----	-----			

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix P
Individual Maternal Food Consumption

Individual Maternal Food Consumption (grams/day)										
Gestation Day										
Group Sex	Animal Number	From: To:	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14
1f	111		24.20	23.90	24.60	27.50	27.30	26.40	31.70	28.40
	112		27.60	25.30	30.70	30.30	27.50	32.50	33.90	31.20
	113		19.00	25.60	21.90	25.30	22.00	28.90	30.00	24.80
	114		22.20	20.80	19.50	25.30	23.60	27.60	22.00	21.30
	115		22.30	25.70	24.70	30.20	25.00	31.70	32.60	32.60
	-----		-----	-----	-----	-----	-----	-----	-----	-----
		Mean	23.100	24.300	24.300	27.600	25.200	29.400	30.000	27.600
		S.D.	3.300	2.100	4.200	2.400	2.400	2.700	4.800	4.500
		N	5	5	5	5	5	5	5	5
	-----		-----	-----	-----	-----	-----	-----	-----	-----
Group Sex	Animal Number	14 15	15 16	16 17	17 18	18 19	19 20	20 21	Total 6 21	
1f	111	26.00	34.60	30.40	29.60	29.10	28.50	24.80	417.000	
	112	30.00	37.00	32.10	35.10	33.00	33.20	32.00	471.400	
	113	31.00	27.60	31.00	28.70	31.60	28.20	26.50	402.100	
	114	27.10	31.40	29.40	30.30	29.50	27.70	30.90	388.600	
	115	27.70	31.00	30.60	35.20	32.50	28.10	34.10	444.000	
	-----		-----	-----	-----	-----	-----	-----	-----	
		28.500	32.400	30.600	31.800	31.200	29.100	29.700	424.620	
		2.100	3.600	0.900	3.000	1.800	2.400	3.900	33.266	
		5	5	5	5	5	5	5	5	
	-----		-----	-----	-----	-----	-----	-----	-----	

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Food Consumption (grams/day)										
Group Sex	Animal Number	From: To:	Gestation Day							
			6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14
2f	211		23.50	24.90	23.90	31.00	26.10	26.50	29.10	28.60
	212		24.40	27.70	26.90	27.40	28.60	31.50	31.90	28.50
	213		27.80	29.80	29.00	34.20	34.40	28.30	31.20	30.00
	214		27.10	24.60	29.30	24.80	31.30	30.30	33.60	31.20
	215		24.80	26.80	25.40	24.70	23.60	25.30	31.70	26.20
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	25.500	26.700	27.000	28.500	28.800	28.500	31.500	28.800
		S.D.	1.800	2.100	2.400	4.200	4.200	2.700	1.500	1.800
		N	5	5	5	5	5	5	5	5
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
2f	211	14 15	26.60	34.30	25.50	30.20	28.20	29.00	26.20	413.600
	212		29.60	33.00	32.20	33.00	30.70	30.70	26.50	442.600
	213		26.90	30.30	32.80	34.90	35.20	31.30	24.10	460.200
	214		32.00	34.20	34.30	34.10	35.40	34.40	30.30	466.900
	215		28.10	28.80	29.10	30.10	29.20	33.10	28.30	415.200
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
			28.500	32.100	30.900	32.400	31.800	31.800	27.000	439.700
			2.100	2.400	3.600	2.100	3.300	2.100	2.400	24.749
			5	5	5	5	5	5	5	5
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Food Consumption (grams/day)										
Gestation Day										
Group Sex	Animal Number	From: To:	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14
3f	311		23.00	25.70	30.70	32.70	27.40	30.00	33.90	34.00
	312		24.00	26.70	30.20	27.60	30.70	33.40	32.60	30.00
	313		28.10	30.20	30.50	34.30	32.00	32.70	35.80	29.80
	314		24.50	24.20	30.50	28.10	30.00	35.00	31.40	27.90
	315		19.10	24.60	24.90	36.10	25.50	26.60	27.50	24.40
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	23.700	26.400	29.400	31.800	29.100	31.500	32.100	29.100
		S.D.	3.300	2.400	2.400	3.900	2.700	3.300	3.000	3.600
		N	5	5	5	5	5	5	5	5
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
Group Sex	Animal Number	14 15	15 16	16 17	17 18	18 19	19 20	20 21	Total 6 21	
3f	311	26.80	35.20	39.50	32.80	39.60	34.00	35.90	481.200	
	312	34.00	32.30	32.10	31.80	33.00	32.80	32.60	463.800	
	313	31.00	34.10	28.20	32.60	32.10	31.70	29.20	472.300	
	314	31.40	35.90	36.10	29.90	32.00	31.80	31.30	460.000	
	315	24.90	30.70	31.60	30.00	29.00	24.70	25.80	405.400	
	-----	-----	-----	-----	-----	-----	-----	-----	-----	
		29.700	33.600	33.600	31.500	33.000	30.900	30.900	456.540	
		3.600	2.100	4.500	1.500	3.900	3.600	3.900	29.734	
		5	5	5	5	5	5	5	5	
	-----	-----	-----	-----	-----	-----	-----	-----	-----	

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Individual Maternal Food Consumption (grams/day)										
Group Sex	Animal Number	From: To:	Gestation Day							
			6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14
4f	411		19.40	21.20	24.10	22.70	25.30	26.20	24.80	22.20
	412		26.70	19.50	20.60	26.20	23.70	24.10	26.40	19.10
	413		4.80	15.40	15.10	24.50	23.70	31.70	11.80	20.20
	414		16.30	18.60	23.50	20.80	22.50	28.50	6.40	26.40
	415		0.70	22.90	18.70	32.90	16.40	24.00	24.40	20.90
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
		Mean	13.500	19.500	20.400	25.500	22.200	27.000	18.900	21.900
		S.D.	10.800	2.700	3.600	4.500	3.600	3.300	9.000	2.700
		N	5	5	5	5	5	5	5	5
	-----	----	-----	-----	-----	-----	-----	-----	-----	-----
4f	Animal Number	14 15	15 16	16 17	17 18	18 19	19 20	20 21	Total 6 21	
		411	25.40	26.10	30.50	26.90	27.40	28.40	25.60	376.200
		412	27.50	25.30	28.30	27.00	29.10	26.60	25.10	375.200
		413	26.30	28.80	29.00	31.20	31.40	30.80	26.20	350.900
		414	25.90	32.30	30.70	26.60	27.70	24.80	26.40	357.400
		415	22.70	26.80	25.20	27.60	23.30	24.50	22.00	333.000
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		25.500	27.900	28.800	27.900	27.900	27.000	25.200	358.540	
		1.800	2.700	2.100	1.800	3.000	2.700	1.800	18.037	
		5	5	5	5	5	5	5	5	
	-----	-----	-----	-----	-----	-----	-----	-----	-----	

Food Consumption Units are g/animal/day
Total = Total consumption for the whole period (g/animal)

Nominal Dose: Group 1 - 0 ppm Group 2 - 250 ppm Group 3 - 1000 ppm Group 4 - 4000 ppm

Appendix Q
Individual Reproductive Data

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Individual Reproductive Data													
Group: 1 0 ppm													
Dam Number	Number of Corpora Lutea		Number of Implantations		% Pre- implantation Loss	Number of Intra-Uterine Deaths		Total Deaths		% Post- implantation Loss	Number of live fetuses		Live Fetuses as % of implantations
	Left	Right	Left	Right		Early Resorption		L	R		Left	Right	
111	9	5	8	5	7.1	0	0	0	0	0.0	8	5	100.0
112	10	9	8	6	26.3	0	0	0	0	0.0	8	6	100.0
113	11	10	6	5	47.6	0	0	0	0	0.0	6	5	100.0
114	11	7	6	5	38.9	0	0	0	0	0.0	6	5	100.0
115	5	12	5	7	29.4	0	0	0	0	0.0	5	7	100.0
	46	43	33	28		0	0	0	0		33	28	
TOTAL		89		61			0		0			61	
Litter Mean		17.8		12.2	29.9					0.0		12.2	100.0
S.D.		2.6		1.3								1.3	
N		5		5			5		5			5	

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded. These dams are excluded from all group summary calculations. Indices, which compare Implantations with Corpora Lutea, do not include animals, with an Implantation count > Corpora Lutea Count. Indices, which compare Fetuses with Implantations, do not include animals, with a Fetus count > Implantation Count.
% / Mean is the percentage or mean of the individual values for the group

Individual Reproductive Data

Group: 2 250 ppm

Dam Number	Number of Corpora Lutea		Number of Implantations		% Pre- implantation Loss	Number of Intra-Uterine Deaths		Total Deaths		% Post- implantation Loss	Number of live fetuses		Live Fetuses as % of implantations
	Left	Right	Left	Right		Early Resorption		L	R		Left	Right	
211	9	11	6	6	40.0	0	0	0	0	0.0	6	6	100.0
212	11	13	7	8	37.5	0	0	0	0	0.0	7	8	100.0
213	5	6	5	6	0.0	0	0	0	0	0.0	5	6	100.0
214	11	7	9	4	27.8	0	0	0	0	0.0	9	4	100.0
215	9	8	6	7	23.5	0	0	0	0	0.0	6	7	100.0
	45	45	33	31		0	0	0	0		33	31	
TOTAL		90		64			0		0			64	
Litter Mean		18.0		12.8	25.8					0.0		12.8	100.0
S.D.		4.7		1.5								1.5	
N		5		5			5		5			5	

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded. These dams are excluded from all group summary calculations. Indices, which compare Implantations with Corpora Lutea, do not include animals, with an Implantation count > Corpora Lutea Count. Indices, which compare Fetuses with Implantations, do not include animals, with a Fetus count > Implantation Count. % / Mean is the percentage or mean of the individual values for the group

Individual Reproductive Data

Group: 3 1000 ppm

Dam Number	Number of Corpora Lutea		Number of Implantations		% Pre- implantation Loss	Number of Intra-Uterine Deaths		Total Deaths		% Post- implantation Loss	Number of live fetuses		Live Fetuses as % of implantations
	Left	Right	Left	Right		Early Resorption		L	R		Left	Right	
311	8	5	8	4	7.7	0	0	0	0	0.0	8	4	100.0
312	13	9	8	5	40.9	0	0	0	0	0.0	8	5	100.0
313	8	7	8	7	0.0	1	0	1	0	6.7	7	7	93.3
314	8	6	7	6	7.1	0	0	0	0	0.0	7	6	100.0
315	3	9	3	9	0.0	0	0	0	0	0.0	3	9	100.0
	40	36	34	31		1	0	1	0		33	31	
TOTAL		76		65			1	1			64		
Litter Mean		15.2		13.0	11.1		0.2	0.2		1.3	12.8		98.7
S.D.		4.0		1.2			0.4	0.4			0.8		
N		5		5			5	5			5		

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded. These dams are excluded from all group summary calculations. Indices, which compare Implantations with Corpora Lutea, do not include animals, with an Implantation count > Corpora Lutea Count. Indices, which compare Fetuses with Implantations, do not include animals, with a Fetus count > Implantation Count. % / Mean is the percentage or mean of the individual values for the group

Individual Reproductive Data

Group: 4 4000 ppm

Dam Number	Number of Corpora Lutea		Number of Implantations		% Pre- implantation Loss	Number of Intra-Uterine Deaths		Total Deaths	% Post- implantation Loss	Number of live fetuses		Live Fetuses as % of implantations
	Left	Right	Left	Right		Early Resorption				Left	Right	
411	8	7	6	5	26.7	0	0	0	0	6	5	100.0
412	14	8	6	4	54.5	0	0	0	0	6	4	100.0
413	8	8	7	7	12.5	0	0	0	0	7	7	100.0
414	7	7	7	6	7.1	0	0	0	0	7	6	100.0
415	6	8	4	8	14.3	0	0	0	0	4	8	100.0
	43	38	30	30		0	0	0	0	30	30	
TOTAL		81		60			0		0		60	
Litter Mean		16.2		12.0	23.0				0.0		12.0	100.0
S.D.		3.3		1.6							1.6	
N		5		5			5		5		5	

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded. These dams are excluded from all group summary calculations. Indices, which compare Implantations with Corpora Lutea, do not include animals, with an Implantation count > Corpora Lutea Count. Indices, which compare Fetuses with Implantations, do not include animals, with a Fetus count > Implantation Count. % / Mean is the percentage or mean of the individual values for the group

Appendix R
Individual Litter Data

Group: 1 0 ppm Dam Number		Individual Litter Data									
		Number of Live Fetuses Total Males Females Herm. Unsexed					% Live	Litter	Mean fetal weight (g)		
							Male	Weight	Overall	Males	Females
							fetuses	(g)			
111		13	7	6	0	0	53.8	74.99	5.768	5.931	5.578
112		14	6	8	0	0	42.9	76.99	5.499	5.748	5.313
113		11	4	7	0	0	36.4	64.97	5.906	6.010	5.847
114		11	8	3	0	0	72.7	62.71	5.701	5.791	5.460
115		12	5	7	0	0	41.7	69.85	5.821	6.002	5.691
TOTAL		61	30	31	0	0					
Litter Mean		12.2	6.0	6.2	0.0	0.0	49.5	69.902	5.739	5.897	5.578
S.D.		1.3	1.6	1.9	0.0	0.0		6.168	0.154	0.121	0.206

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded.
These dams are excluded from all group summary calculations.
Values for dead fetuses are not included in means.
Herm.= Hermaphrodites
Litter mean is the mean of the litter values for the group

Group: 2 250 ppm Dam Number		Individual Litter Data									
		Number of Live Fetuses					% Live Male fetuses	Litter Weight (g)	Mean fetal weight (g)		
		Total	Males	Females	Herm.	Unsexed			Overall	Males	Females
211		12	4	8	0	0	33.3	62.50	5.208	4.948	5.339
212		15	3	12	0	0	20.0	78.60	5.240	5.417	5.196
213		11	4	7	0	0	36.4	63.70	5.791	5.658	5.867
214		13	8	5	0	0	61.5	77.44	5.957	6.039	5.826
215		13	5	8	0	0	38.5	74.05	5.696	5.814	5.623
TOTAL		64	24	40	0	0					
Litter Mean		12.8	4.8	8.0	0.0	0.0	37.9	71.258	5.578	5.575	5.570
S.D.		1.5	1.9	2.5	0.0	0.0		7.644	0.337	0.418	0.296

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded.
These dams are excluded from all group summary calculations.
Values for dead fetuses are not included in means.
Herm.= Hermaphrodites
Litter mean is the mean of the litter values for the group

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Group: 3 1000 ppm Dam Number		Individual Litter Data									
		Number of Live Fetuses					% Live Male fetuses	Litter Weight (g)	Mean fetal weight (g)		
		Total	Males	Females	Herm.	Unsexed			Overall	Males	Females
311		12	7	5	0	0	58.3	64.65	5.388	5.561	5.144
312		13	7	6	0	0	53.8	74.66	5.743	5.771	5.710
313		14	3	11	0	0	21.4	76.36	5.454	5.770	5.368
314		13	5	8	0	0	38.5	80.12	6.163	6.374	6.031
315		12	7	5	0	0	58.3	68.79	5.732	5.840	5.582
TOTAL		64	29	35	0	0					
Litter Mean		12.8	5.8	7.0	0.0	0.0	46.1	72.916	5.696	5.863	5.567
S.D.		0.8	1.8	2.5	0.0	0.0		6.167	0.306	0.304	0.337

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded.
These dams are excluded from all group summary calculations.
Values for dead fetuses are not included in means.
Herm.= Hermaphrodites
Litter mean is the mean of the litter values for the group

Group: 4 4000 ppm Dam Number		Individual Litter Data									
		Number of Live Fetuses					% Live Male fetuses	Litter Weight (g)	Mean fetal weight (g)		
		Total	Males	Females	Herm.	Unsexed			Overall	Males	Females
411		11	7	4	0	0	63.6	58.13	5.285	5.493	4.920
412		10	6	4	0	0	60.0	54.50	5.450	5.588	5.242
413		14	9	5	0	0	64.3	69.28	4.949	5.018	4.824
414		13	8	5	0	0	61.5	71.56	5.505	5.623	5.316
415		12	7	5	0	0	58.3	63.49	5.291	5.347	5.212
TOTAL		60	37	23	0	0					
Litter Mean		12.0	7.4	4.6	0.0	0.0	61.6	63.392	5.296	5.414	5.103
S.D.		1.6	1.1	0.5	0.0	0.0		7.214	0.217	0.246	0.217

(NP) = Not Pregnant. (U) = Unscheduled Death. (TLL) = Total Litter Loss. (E) = Excluded.
These dams are excluded from all group summary calculations.
Values for dead fetuses are not included in means.
Herm.= Hermaphrodites
Litter mean is the mean of the litter values for the group

Appendix S
Individual Fetal Data

INDIVIDUAL FETAL DATA

EXPLANATORY NOTES

Abbreviations:

CL	<i>corpora lutea</i>
Earl	Early resorption
Early PM	Early Postmortem
Exam Set	External Examination
Late	Late resorption
Posn	Implant position <i>in uterus</i>
Viab	Viable fetus

Group: 1 0 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
111						CL_Left 9 CL_Right 5 Gravid Uterus Wt (g) 98.95 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.98	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.87	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.65	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.24	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.93	M	External, No Abnormalities Detected
	L06	Viab	Ext	5.94	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.80	M	External, No Abnormalities Detected
	L08	Viab	Ext	5.71	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.47	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.78	M	External, No Abnormalities Detected
	R03	Viab	Ext	6.22	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.85	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.55	F	External, No Abnormalities Detected
112						CL_Left 10 CL_Right 9 Gravid Uterus Wt (g) 108.71 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.46	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.39	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.94	M	External, No Abnormalities Detected
	L04	Viab	Ext	5.82	F	External, No Abnormalities Detected

Group: 1 0 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
112	L05	Viab	Ext	6.06	M	External, No Abnormalities Detected
	L06	Viab	Ext	5.40	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.29	F	External, No Abnormalities Detected
	L08	Viab	Ext	5.18	F	External, No Abnormalities Detected
	R01	Viab	Ext	4.97	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.15	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.87	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.76	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.32	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.38	F	External, No Abnormalities Detected
113						CL_Left 11 CL_Right 10 Gravid Uterus Wt (g) 89.20 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	6.06	F	External, No Abnormalities Detected
	L02	Viab	Ext	6.04	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.57	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.93	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.57	F	External, No Abnormalities Detected
	L06	Viab	Ext	5.82	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.45	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.94	F	External, No Abnormalities Detected

Group: 1 0 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
113	R03	Viab	Ext	6.23	M	External, No Abnormalities Detected
	R04	Viab	Ext	6.47	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.89	M	External, No Abnormalities Detected
114						CL Left 11 CL Right 7 Gravid Uterus Wt (g) 87.54 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.74	M	External, No Abnormalities Detected
	L02	Viab	Ext	6.10	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.83	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.93	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.36	F	External, No Abnormalities Detected
	L06	Viab	Ext	6.00	M	External, No Abnormalities Detected
	R01	Viab	Ext	5.59	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.67	M	External, No Abnormalities Detected
	R03	Viab	Ext	5.91	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.19	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.39	M	External, No Abnormalities Detected
115						CL Left 5 CL Right 12 Gravid Uterus Wt (g) 96.05 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	6.34	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.67	F	External, No Abnormalities Detected

Group: 1 0 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
115	L03	Viab	Ext	5.83	M	External, No Abnormalities Detected
	L04	Viab	Ext	5.61	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.86	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.76	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.68	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.87	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.71	M	External, No Abnormalities Detected
	R05	Viab	Ext	6.26	M	External, No Abnormalities Detected
	R06	Viab	Ext	5.68	F	External, No Abnormalities Detected
	R07	Viab	Ext	5.58	F	External, No Abnormalities Detected

Group: 2 250 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
211						CL_Left 9 CL_Right 11 Gravid Uterus Wt (g) 86.23 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.63	M	External, No Abnormalities Detected
	L02	Viab	Ext	3.03	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.23	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.49	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.56	F	External, No Abnormalities Detected
	L06	Viab	Ext	5.46	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.36	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.33	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.30	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.25	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.77	M	External, No Abnormalities Detected
	R06	Viab	Ext	5.09	F	External, No Abnormalities Detected
212						CL_Left 11 CL_Right 13 Gravid Uterus Wt (g) 107.07 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.24	F	External, No Abnormalities Detected
	L02	Viab	Ext	5.23	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.22	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.27	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.07	F	External, No Abnormalities Detected

Group: 2 250 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
212	L06	Viab	Ext	5.49	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.12	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.10	F	External, No Abnormalities Detected
	R02	Viab	Ext	4.91	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.05	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.54	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.21	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.49	M	External, No Abnormalities Detected
	R07	Viab	Ext	5.18	F	External, No Abnormalities Detected
	R08	Viab	Ext	5.48	F	External, No Abnormalities Detected
213	CL_Left 5 CL_Right 6 Gravid Uterus Wt (g) 91.60 Pregnancy Type: Pregnant Early PM: No					
	L01	Viab	Ext	5.90	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.88	F	External, No Abnormalities Detected
	L03	Viab	Ext	6.19	M	External, No Abnormalities Detected
	L04	Viab	Ext	6.00	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.77	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.98	M	External, No Abnormalities Detected
	R02	Viab	Ext	6.11	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.92	F	External, No Abnormalities Detected

Group: 2 250 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
213	R04	Viab	Ext	5.73	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.66	F	External, No Abnormalities Detected
	R06	Viab	Ext	4.56	M	External, No Abnormalities Detected
214						CL Left 11 CL Right 7 Gravid Uterus Wt (g) 105.35 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	6.14	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.29	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.98	M	External, No Abnormalities Detected
	L04	Viab	Ext	6.11	M	External, No Abnormalities Detected
	L05	Viab	Ext	6.07	M	External, No Abnormalities Detected
	L06	Viab	Ext	6.10	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.81	F	External, No Abnormalities Detected
	L08	Viab	Ext	6.07	M	External, No Abnormalities Detected
	L09	Viab	Ext	5.79	M	External, No Abnormalities Detected
	R01	Viab	Ext	5.93	F	External, No Abnormalities Detected
	R02	Viab	Ext	6.05	M	External, No Abnormalities Detected
	R03	Viab	Ext	6.11	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.99	F	External, No Abnormalities Detected
215						CL Left 9 CL Right 8 Gravid Uterus Wt (g) 97.35 Pregnancy Type: Pregnant Early PM: No

Group: 2 250 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
215	L01	Viab	Ext	5.60	F	External, No Abnormalities Detected
	L02	Viab	Ext	5.43	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.51	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.50	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.88	F	External, No Abnormalities Detected
	L06	Viab	Ext	6.11	M	External, No Abnormalities Detected
	R01	Viab	Ext	5.64	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.50	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.73	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.62	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.73	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.67	M	External, No Abnormalities Detected
	R07	Viab	Ext	6.13	M	External, No Abnormalities Detected

Group: 3 1000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
311						CL_Left 8 CL_Right 5 Gravid Uterus Wt (g) 89.93 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	4.90	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.49	F	External, No Abnormalities Detected
	L03	Viab	Ext	4.92	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.32	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.63	F	External, No Abnormalities Detected
	L06	Viab	Ext	5.79	M	External, No Abnormalities Detected
	L07	Viab	Ext	4.03	F	External, No Abnormalities Detected
	L08	Viab	Ext	5.56	M	External, No Abnormalities Detected
	R01	Viab	Ext	5.55	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.65	F	External, No Abnormalities Detected
	R03	Viab	Ext	5.31	M	External, No Abnormalities Detected
	R04	Viab	Ext	6.50	M	External, No Abnormalities Detected
312						CL_Left 13 CL_Right 9 Gravid Uterus Wt (g) 102.19 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.93	F	External, No Abnormalities Detected
	L02	Viab	Ext	6.04	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.78	M	External, No Abnormalities Detected
	L04	Viab	Ext	5.35	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.42	F	External, No Abnormalities Detected

Group: 3 1000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
312	L06	Viab	Ext	5.61	F	External, No Abnormalities Detected
	L07	Viab	Ext	5.48	M	External, No Abnormalities Detected
	L08	Viab	Ext	5.83	M	External, No Abnormalities Detected
	R01	Viab	Ext	6.22	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.48	F	External, No Abnormalities Detected
	R03	Viab	Ext	6.18	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.74	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.60	F	External, No Abnormalities Detected
313						CL Left 8 CL Right 7 Gravid Uterus Wt (g) 106.41 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.42	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.31	F	External, No Abnormalities Detected
	L03	Earl				
	L04	Viab	Ext	5.91	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.15	F	External, No Abnormalities Detected
	L06	Viab	Ext	5.10	F	External, No Abnormalities Detected
	L07	Viab	Ext	5.61	F	External, No Abnormalities Detected
	L08	Viab	Ext	5.02	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.12	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.76	F	External, No Abnormalities Detected

Group: 3 1000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
313	R03	Viab	Ext	5.74	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.36	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.51	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.37	F	External, No Abnormalities Detected
	R07	Viab	Ext	5.98	M	External, No Abnormalities Detected
314						CL Left 8 CL Right 6 Gravid Uterus Wt (g) 110.42 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.71	F	External, No Abnormalities Detected
	L02	Viab	Ext	6.17	F	External, No Abnormalities Detected
	L03	Viab	Ext	6.03	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.84	F	External, No Abnormalities Detected
	L05	Viab	Ext	6.50	M	External, No Abnormalities Detected
	L06	Viab	Ext	6.10	M	External, No Abnormalities Detected
	L07	Viab	Ext	6.25	F	External, No Abnormalities Detected
	R01	Viab	Ext	6.54	M	External, No Abnormalities Detected
	R02	Viab	Ext	6.14	F	External, No Abnormalities Detected
	R03	Viab	Ext	6.44	M	External, No Abnormalities Detected
	R04	Viab	Ext	6.29	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.91	F	External, No Abnormalities Detected
	R06	Viab	Ext	6.20	F	External, No Abnormalities Detected

Group: 3 1000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
315						CL_Left 3 CL_Right 9 Gravid Uterus Wt (g) 90.32 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.77	F	External, No Abnormalities Detected
	L02	Viab	Ext	5.56	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.72	F	External, No Abnormalities Detected
	R01	Viab	Ext	6.04	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.61	M	External, No Abnormalities Detected
	R03	Viab	Ext	5.69	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.74	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.93	M	External, No Abnormalities Detected
	R06	Viab	Ext	5.80	M	External, No Abnormalities Detected
	R07	Viab	Ext	5.47	F	External, No Abnormalities Detected
	R08	Viab	Ext	5.26	F	External, No Abnormalities Detected
	R09	Viab	Ext	6.20	M	External, No Abnormalities Detected

Group: 4 4000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
411						CL_Left 8 CL_Right 7 Gravid Uterus Wt (g) 81.58 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.05	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.23	M	External, No Abnormalities Detected
	L03	Viab	Ext	4.77	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.08	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.36	M	External, No Abnormalities Detected
	L06	Viab	Ext	4.87	F	External, No Abnormalities Detected
	R01	Viab	Ext	5.47	M	External, No Abnormalities Detected
	R02	Viab	Ext	5.55	M	External, No Abnormalities Detected
	R03	Viab	Ext	4.96	F	External, No Abnormalities Detected
	R04	Viab	Ext	5.95	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.84	M	External, No Abnormalities Detected
412						CL_Left 14 CL_Right 8 Gravid Uterus Wt (g) 73.87 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.52	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.18	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.09	F	External, No Abnormalities Detected
	L04	Viab	Ext	6.03	M	External, No Abnormalities Detected
	L05	Viab	Ext	5.35	F	External, No Abnormalities Detected
	L06	Viab	Ext	5.35	M	External, No Abnormalities Detected

Group: 4 4000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
412	R01	Viab	Ext	5.35	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.72	M	External, No Abnormalities Detected
	R03	Viab	Ext	5.79	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.12	M	External, No Abnormalities Detected
413						CL_Left 8 CL_Right 8 Gravid Uterus Wt (g) 90.94 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.22	M	External, No Abnormalities Detected
	L02	Viab	Ext	5.17	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.48	M	External, No Abnormalities Detected
	L04	Viab	Ext	4.81	F	External, No Abnormalities Detected
	L05	Viab	Ext	4.62	F	External, No Abnormalities Detected
	L06	Viab	Ext	4.89	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.21	M	External, No Abnormalities Detected
	R01	Viab	Ext	4.47	M	External, No Abnormalities Detected
	R02	Viab	Ext	4.76	M	External, No Abnormalities Detected
	R03	Viab	Ext	4.77	F	External, No Abnormalities Detected
	R04	Viab	Ext	4.93	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.01	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.03	M	External, No Abnormalities Detected
	R07	Viab	Ext	4.91	F	External, No Abnormalities Detected

Group: 4 4000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
414						CL_Left 7 CL_Right 7 Gravid Uterus Wt (g) 89.07 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.34	F	External, No Abnormalities Detected
	L02	Viab	Ext	6.17	M	External, No Abnormalities Detected
	L03	Viab	Ext	5.48	F	External, No Abnormalities Detected
	L04	Viab	Ext	5.26	F	External, No Abnormalities Detected
	L05	Viab	Ext	5.07	M	External, No Abnormalities Detected
	L06	Viab	Ext	5.33	M	External, No Abnormalities Detected
	L07	Viab	Ext	5.68	M	External, No Abnormalities Detected
	R01	Viab	Ext	5.33	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.63	M	External, No Abnormalities Detected
	R03	Viab	Ext	5.61	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.70	M	External, No Abnormalities Detected
	R05	Viab	Ext	5.17	F	External, No Abnormalities Detected
	R06	Viab	Ext	5.79	M	External, No Abnormalities Detected
415						CL_Left 6 CL_Right 8 Gravid Uterus Wt (g) 81.84 Pregnancy Type: Pregnant Early PM: No
	L01	Viab	Ext	5.27	M	External, No Abnormalities Detected
	L02	Viab	Ext	4.92	F	External, No Abnormalities Detected
	L03	Viab	Ext	5.28	M	External, No Abnormalities Detected
	L04	Viab	Ext	5.60	M	External, No Abnormalities Detected

Group: 4 4000 ppm					Individual Fetal Data	
Dam Number	Posn	Type	Exam Set	Fetal Wt g	Sex	Observations
415	R01	Viab	Ext	4.82	F	External, No Abnormalities Detected
	R02	Viab	Ext	5.10	M	External, No Abnormalities Detected
	R03	Viab	Ext	5.27	M	External, No Abnormalities Detected
	R04	Viab	Ext	5.56	F	External, No Abnormalities Detected
	R05	Viab	Ext	5.60	M	External, No Abnormalities Detected
	R06	Viab	Ext	5.31	M	External, No Abnormalities Detected
	R07	Viab	Ext	5.45	F	External, No Abnormalities Detected
	R08	Viab	Ext	5.31	F	External, No Abnormalities Detected

Appendix T
Individual Animal Pathology Data

Pathology - Individual Animal Data

Animal Ref.: 101 Group: 1 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 379.1g

Organ Weights:

KIDNEYS : 3.516g LIVER : 13.387g LUNGS : 1.808g TESTES : 3.061g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

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Pathology - Individual Animal Data

Animal Ref.: 102 Group: 1 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 397.1g

Organ Weights:

KIDNEYS : 3.247g LIVER : 17.145g LUNGS : 1.937g TESTES : 3.367g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 103 Group: 1 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 376.8g

Organ Weights:

KIDNEYS : 3.343g LIVER : 16.449g LUNGS : 1.745g TESTES : 3.274g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 104 Group: 1 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 387.7g

Organ Weights:

KIDNEYS : 3.444g LIVER : 17.717g LUNGS : 1.926g TESTES : 3.317g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 105 Group: 1 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 453.9g

Organ Weights:

KIDNEYS : 3.568g LIVER : 20.897g LUNGS : 2.190g TESTES : 3.742g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 111 Group: 1 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 388.9g

Organ Weights:

KIDNEYS : 2.060g LIVER : 14.010g LUNGS : 1.120g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 112 Group: 1 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 417.4g

Organ Weights:

KIDNEYS : 2.240g LIVER : 15.540g LUNGS : 1.320g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 113 Group: 1 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 387.4g

Organ Weights:

KIDNEYS : 2.100g LIVER : 16.840g LUNGS : 1.480g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 114 Group: 1 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 376.4g

Organ Weights:

KIDNEYS : 2.000g LIVER : 14.350g LUNGS : 1.190g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 115 Group: 1 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 0 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 422.6g

Organ Weights:

KIDNEYS : 2.470g LIVER : 18.860g LUNGS : 1.380g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 201 Group: 2 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 360.8g

Organ Weights:

KIDNEYS : 3.331g LIVER : 14.998g LUNGS : 2.028g TESTES : 3.186g

Gross Pathology Observations:

KIDNEYS;
left; Cyst; dark (TGL): 1mm dia

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Codes Used: (TGL) = Trackable Gross Lesion

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Pathology - Individual Animal Data

Animal Ref.: 202 Group: 2 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 380g

Organ Weights:

KIDNEYS : 3.530g LIVER : 16.447g LUNGS : 1.921g TESTES : 3.282g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 203 Group: 2 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 396.9g

Organ Weights:

KIDNEYS : 3.753g LIVER : 19.452g LUNGS : 1.802g TESTES : 3.395g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 204 Group: 2 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 354.2g

Organ Weights:

KIDNEYS : 3.170g LIVER : 16.370g LUNGS : 1.735g TESTES : 3.786g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

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Pathology - Individual Animal Data

Animal Ref.: 205 Group: 2 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 333.9g

Organ Weights:

KIDNEYS : 3.562g LIVER : 14.686g LUNGS : 1.524g TESTES : 3.018g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

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Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

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Pathology - Individual Animal Data

Animal Ref.: 211 Group: 2 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 385.4g

Organ Weights:

KIDNEYS : 2.200g LIVER : 15.060g LUNGS : 1.440g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 212 Group: 2 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 396.7g

Organ Weights:

KIDNEYS : 2.340g LIVER : 13.120g LUNGS : 1.350g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 213 Group: 2 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 392.1g

Organ Weights:

KIDNEYS : 2.190g LIVER : 15.980g LUNGS : 1.590g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 214 Group: 2 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 392.5g

Organ Weights:

KIDNEYS : 2.080g LIVER : 15.800g LUNGS : 1.240g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 215 Group: 2 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 250 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 396g

Organ Weights:

KIDNEYS : 2.180g LIVER : 14.230g LUNGS : 1.360g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

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Pathology - Individual Animal Data

Animal Ref.: 301 Group: 3 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 376.5g

Organ Weights:

KIDNEYS : 3.888g LIVER : 18.364g LUNGS : 1.858g TESTES : 3.715g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 302 Group: 3 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 356.4g

Organ Weights:

KIDNEYS : 3.477g LIVER : 16.965g LUNGS : 1.794g TESTES : 3.234g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 303 Group: 3 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 340.9g

Organ Weights:

KIDNEYS : 3.568g LIVER : 16.329g LUNGS : 1.623g TESTES : 3.273g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 304 Group: 3 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 384.8g

Organ Weights:

KIDNEYS : 3.889g LIVER : 19.589g LUNGS : 2.009g TESTES : 3.535g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 305 Group: 3 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 362.6g

Organ Weights:

KIDNEYS : 3.074g LIVER : 18.330g LUNGS : 1.810g TESTES : 3.513g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 311 Group: 3 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 407.4g

Organ Weights:

KIDNEYS : 2.290g LIVER : 16.290g LUNGS : 1.670g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 312 Group: 3 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 409.1g

Organ Weights:

KIDNEYS : 2.280g LIVER : 16.160g LUNGS : 1.430g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 313 Group: 3 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 407.3g

Organ Weights:

KIDNEYS : 1.950g LIVER : 17.170g LUNGS : 1.230g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 314 Group: 3 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 406.5g

Organ Weights:

KIDNEYS : 2.060g LIVER : 14.790g LUNGS : 1.430g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 315 Group: 3 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 1000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 372.4g

Organ Weights:

KIDNEYS : 1.930g LIVER : 14.850g LUNGS : 1.240g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 401 Group: 4 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 370.4g

Organ Weights:

KIDNEYS : 3.592g LIVER : 20.849g LUNGS : 1.968g TESTES : 3.567g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 402 Group: 4 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 337.1g

Organ Weights:

KIDNEYS : 3.577g LIVER : 18.987g LUNGS : 1.755g TESTES : 3.818g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 403 Group: 4 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 340.1g

Organ Weights:

KIDNEYS : 3.384g LIVER : 18.717g LUNGS : 1.673g TESTES : 3.580g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 404 Group: 4 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 359.8g

Organ Weights:

KIDNEYS : 3.788g LIVER : 19.418g LUNGS : 1.726g TESTES : 3.502g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 405 Group: 4 Sex: Male Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/06/06 Study Day No. (Week): 15 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/06/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 331.2g

Organ Weights:

KIDNEYS : 3.582g LIVER : 17.485g LUNGS : 1.696g TESTES : 3.236g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 411 Group: 4 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 357.2g

Organ Weights:

KIDNEYS : 2.200g LIVER : 17.190g LUNGS : 1.290g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 412 Group: 4 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 336.5g

Organ Weights:

KIDNEYS : 2.010g LIVER : 16.360g LUNGS : 1.110g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Naphtha, Petroleum, Heavy Straight-Run:
Pilot Inhalation Developmental and Two-Week Toxicity Study in Rats

DuPont-18330

Pathology - Individual Animal Data

Animal Ref.: 413 Group: 4 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 364.6g

Organ Weights:

KIDNEYS : 2.040g LIVER : 18.800g LUNGS : 1.300g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 414 Group: 4 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 344.7g

Organ Weights:

KIDNEYS : 2.120g LIVER : 18.280g LUNGS : 1.170g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Pathology - Individual Animal Data

Animal Ref.: 415 Group: 4 Sex: Female Species: Rat Strain: Crl:CD(SD)
Test Material: High Naphthenic Naphtha Dose: 4000 ppm Route: Inhalation Study Type: Developmental Pilot
Date of Death : 03/08/06 Study Day No. (Week): 16 (3) Mode of Death: SACRIFICE BY DESIGN
Date of Necropsy: 03/08/06 ** NECROPSY COMPLETE **

:

Terminal Body Weight: 331.9g

Organ Weights:

KIDNEYS : 1.970g LIVER : 15.090g LUNGS : 1.390g

Gross Pathology Observations: None

Any remaining protocol required tissues, which have been examined, have no visible lesions

Probable cause of death: None

Appendix U
Individual Gross Pathology Observations

INDIVIDUAL GROSS PATHOLOGY OBSERVATIONS

EXPLANATORY NOTES

Note

Test days for animal fates are determined from the initiation of test substance administration.

Individual Gross Pathology Observations

Group: 1 Dose: 0 ppm Sex: Male

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
101	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
102	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
103	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
104	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
105	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 2 Dose: 250 ppm Sex: Male

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
201	SACRIFICE BY DESIGN	15	(3)	KIDNEYS; left; Cyst; dark: 1mm dia Any remaining protocol required tissues, which have been examined, have no visible lesions
202	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
203	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
204	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
205	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 3 Dose: 1000 ppm Sex: Male

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
301	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
302	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
303	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
304	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
305	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 4 Dose: 4000 ppm Sex: Male

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
401	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
402	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
403	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
404	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions
405	SACRIFICE BY DESIGN	15	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 1 Dose: 0 ppm Sex: Female

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
111	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
112	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
113	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
114	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
115	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 2 Dose: 250 ppm Sex: Female

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
211	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
212	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
213	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
214	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
215	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 3 Dose: 1000 ppm Sex: Female

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
311	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
312	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
313	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
314	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
315	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions

Individual Gross Pathology Observations

Group: 4 Dose: 4000 ppm Sex: Female

Animal Ref.	Mode Of Death	Death Day	(Week)	Observation(s)
411	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
412	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
413	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
414	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions
415	SACRIFICE BY DESIGN	16	(3)	No Visible Lesions