STUDY NO. 00-4204
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GASOLINE ETBE VAPOR CONDENSATE:

A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION

TOXICITY STUDY IN RATS

Final Report

Volume II of II

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Key to Abbreviations

Gl	=	Gland
LN	=	Lymph Node
Oviducts/Fallop	=	Oviducts/Fallopian

Notes

1. Unless otherwise specified in a histopathology note, the organ/tissue examined was the required (routine) section.

2. The dimensions of gross lesions are presented as a general range based on the actual dimensions noted during macroscopic examinations. The actual dimensions of gross lesions can be found in the raw data.

Corresponding exposure levels for each group were as follows:

Group 1 - 0 mg/m^3
Group 2 - 2000 mg/m^3
Group 3 - 10000 mg/m^3
Group 4 - 20000 mg/m^3

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice — SEX: Male — ANIMAL: 1051
PHASE DAY OF DEATH: 111 — PHASE: Dosing phase — GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Lungs	Discolored, Left lobe(s), Red, Foci, <= 0.1 cm, Slight	Tissue is unremarkable. Examined; no correlation found
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1052
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1053
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1054
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1055
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Pituitary gland	No gross observations on tissue.	Tissue is missing.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Coagulating Gl Right Epididymis Lungs Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1056
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1057
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1058
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Brain	Small, Cerebrum, Slight/ Posterior portions of both hemispheres, exposing the dorsal midbrain.	Examined; 1 correlation found: MICROENCEPHALY, Present. - A single transverse section through the midbrain is present.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Coagulating Gl	Right Epididymis	Lungs	Pituitary gland
Prostate	Seminal vesicles	Right Testis		

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1059
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	PERIVASCULAR GRANULOCYTIC INFILTRATE, Slight.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.
Thymus	Discolored, Right lobe, Red, Foci, </= 0.1 cm, Slight	Examined; 1 correlation found: CONGESTION, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1060
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1061
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Discolored, Medial lobe, Tan, Area, 0.6 - 0.9 cm Adhesion, Medial lobe, Slight/ To left lobe.	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1062
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1063
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1064
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Adhesion, Medial lobe, Moderate/ Median lobe adhesion to the diaphragm.	No micropathology observations on tissue.
Thymus	Discolored, Red, Foci, </= 0.1 cm, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice — SEX: Male — ANIMAL: 1065
PHASE DAY OF DEATH: 112 — PHASE: Dosing phase — GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Left Epididymis	Abscess, Tan, Soft, 1.0 - 1.5 cm/ Caudal	Examined; 1 correlation found: SPERM GRANULOMA, Present.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.
Seminal vesicles . . .	Small, Left, Moderate	Examined; 1 correlation found: SECRETORY PRODUCT: DECREASED, UNILATERAL, Moderate.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Lungs Pituitary gland Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1066
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1067
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, BILATERAL, Minimal.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Coagulating Gl Right Epididymis Lungs Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1068
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1069
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	Tissue is unremarkable (with comment). - One lung is atelectatic.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1070
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, BILATERAL, Minimal.
Lungs	Discolored, Left lobe(s), Red, Foci, </= 0.1 cm, Slight	Tissue is unremarkable. Examined; no correlation found
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1071
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Coagulating Gl	. . . . No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Prostate	. . . . . No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Right Epididymis Lungs Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1072
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1073
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1074
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Brain	Small, Cerebrum, Slight/ Posterior portions of both hemispheres, exposing the dorsal midbrain. Enlarged rostral and caudal colliculi.	No micropathology observations on tissue.
Thymus	Discolored, Red, Areas, 0.6 - 0.9 cm, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 1075
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	Small, Right, Soft, Moderate	Examined; 1 correlation found: HYPOPLASIA, UNILATERAL, Present.
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Coagulating Gl Right Epididymis Lungs Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 1076
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2051
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Dilated Pelvis, Right, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2052
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2053
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2054
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, Right cardiac lobe, Red, Focus, <= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2055
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2056
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2057
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2058
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2059
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2060
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
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Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2061
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2062
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2063
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2064
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2065
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
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STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2066
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2067
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2068
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Dilated Pelvis, Left, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2069
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2070
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2071
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Right Epididymis . . .	Small, Severe	No micropathology observations on tissue.
Right Testis	Soft, Foci, </= 0.1 cm, Severe	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2072
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Found Dead | SEX: Male | ANIMAL: 2073
PHASE DAY OF DEATH: 42 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Bone	Fracture, Moderate/ Right nasal	No micropathology observations on tissue.
Lungs	Discolored, All lobes, Red, Severe	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2074
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 2075
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 2076
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3051
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3052
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3053
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3054
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Humane/Otherwise Specified | SEX: Male | ANIMAL: 3055
PHASE DAY OF DEATH: 59 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3056
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3057
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3058
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver		No micropathology observations on tissue.
	Adhesion, Moderate/ Between median and right lobes. Median lobe and duodenum	
	Nodule, Medial lobe, Tan, Firm, 0.2 - 0.5 cm	
Lungs		No micropathology observations on tissue.
	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3059
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Prostate	Discolored, Dorsal, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3060
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3061
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3062
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Red, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.
Thymus	Discolored, Red, Foci, </= 0.1 cm, Slight/ Bilateral	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3063
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3064
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Adhesion, Moderate/ Median, left lobes to diaphragm	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3065
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3066
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3067
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3068
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3069
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3070
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3071
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3072
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Dilated Pelvis, Bilateral, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3073
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3074
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 3075
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 3076
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Red, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4051
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4052
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4053
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: MONONUCLEAR CELL INFILTRATE, BILATERAL, Multifocal, Minimal.
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable (with comment). - One side has scant representation.
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	Tissue is unremarkable. Examined; no correlation found
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4054
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4055
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4056
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4057
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4058
PHASE DAY OF DEATH: 111	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4059
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Lungs	No gross observations on tissue.	Tissue is unremarkable (with comment). - One lung is partially atelectatic.
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4060
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4061
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, White, Foci, </= 0.1 cm, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4062
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, Right lobes, Red, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4063
PHASE DAY OF DEATH: 111 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	Tissue is unremarkable (with comment). - One section lacks medulla.
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.
Thymus	Discolored, Red, Foci, </= 0.1 cm, Moderate	Examined; 1 correlation found: CONGESTION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Right Epididymis Lungs Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4064
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Dilated Pelvis, Bilateral, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4065
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4066
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, BILATERAL, Minimal.
Lungs	No gross observations on tissue.	INTERSTITIUM: SUBACUTE/CHRONIC INFLAMMATION, Minimal. ALVEOLAR/INTRAALVEOLAR MACROPHAGES, Minimal.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4067
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4068
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Discolored, Bilateral, Tan, Mottled, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4069
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4070
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, BILATERAL, Minimal.
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Lungs	Discolored, Right diaphragmatic lobe, Red, Foci, </= 0.1 cm, Slight	Examined; no correlation found
		PERIVASCULAR GRANULOCYTIC INFILTRATE, Minimal.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4071
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, 0.2 - 0.5 cm, Slight	Examined; 1 correlation found: VISCERAL PLEURA/CAPSULE: SUBACUTE (CHRONIC ACTIVE)/ CHRONIC INFLAMMATION, Focal, Minimal.
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4072
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, BILATERAL, Minimal.
Coagulating Gl	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Lungs	No gross observations on tissue.	VISCERAL PLEURA/CAPSULE: SUBACUTE (CHRONIC ACTIVE)/ CHRONIC INFLAMMATION, Minimal.
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.
Skin	Mass, Tan, Firm, 0.2 - 0.5 cm, Slight/ Left lower lip	Examined; 1 correlation found: ACANTHOSIS, Moderate. HYPERKERATOSIS, Slight. - Skin from lower lip.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice — SEX: Male — ANIMAL: 4073
PHASE DAY OF DEATH: 112 — PHASE: Dosing phase — GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, <= 0.1 cm, Moderate	Tissue is unremarkable. Examined; no correlation found
Prostate	No gross observations on tissue.	INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Male	ANIMAL: 4074
PHASE DAY OF DEATH: 112	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4075
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	Tissue is unremarkable (with comment). - One lung is atelectatic.
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles
Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Male | ANIMAL: 4076
PHASE DAY OF DEATH: 112 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	No gross observations on tissue.	CORTEX: ZONA FASCICULATA-VACUOLATED, Minimal.
Lungs	No gross observations on tissue.	PERIVASCULAR GRANULOCYTIC INFILTRATE, Focal, Minimal.
Prostate	No gross observations on tissue.	MONONUCLEAR CELL INFILTRATE, Minimal. INTRALUMENAL CELLULAR DEBRIS +/- MINERALIZATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Coagulating Gl Right Epididymis Pituitary gland Seminal vesicles Right Testis

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1551
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	PERIVASCULAR GRANULOCYTIC INFILTRATE, Minimal. ALVEOLAR/INTRAALVEOLAR MACROPHAGES, Minimal.
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, UNILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1552
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1553
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1554
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1556
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, Left lobe(s), Red, Foci, <= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1557
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1558
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1559
PHASE DAY OF DEATH: 132 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	Tissue is unremarkable. Examined; no correlation found

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1560
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1561
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1562
PHASE DAY OF DEATH: 119	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1563
PHASE DAY OF DEATH: 124 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1564
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	PERIVASCULAR GRANULOCYTIC INFILTRATE, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1565
PHASE DAY OF DEATH: 124 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	VISCERAL PLEURA/CAPSULE: SUBACUTE (CHRONIC ACTIVE)/ CHRONIC INFLAMMATION, Minimal.
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, UNILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1566
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1567
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1568
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, UNILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Lungs Oviducts/Fallop Ovaries Pituitary gland
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1569
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1570
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1571
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, Right diaphragmatic lobe, Red, Foci, </= 0.1 cm	Tissue is unremarkable.
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, UNILATERAL, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1572
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Ovaries	No gross observations on tissue.	Tissue is unremarkable (with comment). - Adrenal gland is also present unilaterally.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Lungs Oviducts/Fallop Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1573
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 1574
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1575
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 1576
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 1

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 2551
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2552
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2554
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2555
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2556
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2557
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2558
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2560
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 2561
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2562
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2563
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2564
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2565
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2566
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2567
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2568
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2569
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 2570
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2571
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 2572
PHASE DAY OF DEATH: 124 | PHASE: Dosing phase | GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Kidneys	Dilated Pelvis, Right, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2573
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2574
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2575
PHASE DAY OF DEATH: 124	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 2576
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 2

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3551
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3552
PHASE DAY OF DEATH: 126 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs		No micropathology observations on tissue.
	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	
	Discolored, Right diaphragmatic lobe, Red, Foci, </= 0.1 cm, Slight	

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3553
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Discolored, Medial lobe, Red, Areas, 0.6 - 0.9 cm, Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3554
PHASE DAY OF DEATH: 119	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3555
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3556
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3557
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3558
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3559
PHASE DAY OF DEATH: 119	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3560
PHASE DAY OF DEATH: 127 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Red, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3561
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3562
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3563
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3564
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3565
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, Left lobe(s), Red, Focus, </= 0.1 cm, Slight	No micropathology observations on tissue.
Vagina	Nodule, Serosa, Tan, Firm, 0.2 - 0.5 cm	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3566
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3567
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3568
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3569
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3570
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Adhesion, Moderate/ Median lobe and part of left lobe to diaphragm	No micropathology observations on tissue.
Mammary gland	Mass, Tan, Firm, 1.0 - 1.5 cm, Moderate/ Ventral thoracic	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3571
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3572
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Cavity	Nodule(s), Peritoneal, Red, Firm, 0.6 - 0.9 cm/ Adipose tissue, close to right ovary	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3573
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3574
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 3575
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 3576
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 3

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4551
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	Tissue is unremarkable (with comment). - One lobe is atelectatic.
Uterus	No gross observations on tissue.	LUMEN: DILATED, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Accidental/Traumatic — SEX: Female — ANIMAL: 4553
PHASE DAY OF DEATH: 42 — PHASE: Dosing phase — GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Bone	Fracture, Skull, Moderate/ Nasal- right	No micropathology observations on tissue.
Thymus	Discolored, Red, Foci, 0.2 - 0.5 cm, Moderate/ Bilateral	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4554
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Liver	Irregular Surface, All lobes , Moderate	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4555
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4556
PHASE DAY OF DEATH: 127	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4557
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4558
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4559
PHASE DAY OF DEATH: 125 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	No gross observations on tissue.	PERIVASCULAR GRANULOCYTIC INFILTRATE, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4560
PHASE DAY OF DEATH: 122	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4561
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, </= 0.1 cm, Slight	INTERSTITIUM: SUBACUTE/CHRONIC INFLAMMATION, Minimal.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4563
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Thymus	Discolored, Right lobe, Red, Foci, </= 0.1 cm, Slight	No micropathology observations on tissue.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4564
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Mammary gland	Mass, Tan, Moderate/ Left mid lateral, 0.7 x 0.4 x 0.2 cm	Examined; 1 correlation found: SUBACUTE (CHRONIC ACTIVE)/CHRONIC INFLAMMATION, Slight. - Ducts contain macrophages. Multifocal interstitial infiltrates of neutrophils or lymphocytes.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4565
PHASE DAY OF DEATH: 123 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Adrenal Glands	. . . . No gross observations on tissue.	CONGESTION, BILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Lungs Oviducts/Fallop Ovaries Pituitary gland Uterus
Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4566
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands	Lungs	Oviducts/Fallop	Ovaries	Pituitary gland
Uterus	Vagina			

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4567
PHASE DAY OF DEATH: 120	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4568
PHASE DAY OF DEATH: 123	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4569
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4570
PHASE DAY OF DEATH: 120 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4571
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice	SEX: Female	ANIMAL: 4572
PHASE DAY OF DEATH: 121	PHASE: Dosing phase	GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4573
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Oviducts/Fallop	No gross observations on tissue.	Tissue is unremarkable; one-of-pair missing.
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, UNILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Lungs Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4574
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Lungs	Discolored, All lobes, Tan, Foci, <= 0.1 cm, Moderate	Tissue is unremarkable. Examined; no correlation found
Uterus	No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, BILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
Adrenal Glands Oviducts/Fallop Ovaries Pituitary gland Vagina

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4575
PHASE DAY OF DEATH: 122 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:
No tissues examined.

Gasoline ETBE Vapor Condensate
A One-Generation Whole-Body Inhalation Reproduction Toxicity
Study in Rats
Individual Animal Gross and Microscopic Observations

STATUS: Final phase sacrifice | SEX: Female | ANIMAL: 4576
PHASE DAY OF DEATH: 121 | PHASE: Dosing phase | GROUP: 4

Tissue	Gross Observations/Comments	Microscopic Observations/Comments
Uterus	. . . . . No gross observations on tissue.	MURAL HISTIOCYTES WITH BROWN PIGMENT, BILATERAL, Slight.

Tissues without comment under Gross Observations were within normal limits at necropsy.
The following tissues were unremarkable microscopically:

Adrenal Glands Lungs Oviducts/Fallop Ovaries Pituitary gland
Vagina

	Released Pup and Historical Control Data	Appendix AA

Note

During Lactation Days 25-27 on 18 July 2002, a Group 1 rack containing the pups from dam numbers 1554, 1556, 1560, 1563, 1565, 1566, 1568, 1569, 1572, 1574, 1575, and 1576 was accidentally overturned releasing the litters so that it could not be determined which pups were from which litters. The dams were in the exposure chamber at the time of the incident and were unaffected. Of the 12 litters of control-group pups, 108 pups in total were released and 105 survived. The laboratory necropsied and collected organ weight data on all 105 pups.

In addition, one female pup missing from dam number 1552 on Lactation Day 28 was apparently mis-identified as a released pup. Organ weights were collected and the pup was necropsied with the released pups.

The data for all 106 pups was separated according to sex, and the mean, standard deviation and range of values is presented separately from data of unaffected litters. The corresponding Lactation Day (LD) for each litter on the day of necropsy and data collection is as follows:

1554	LD27	1556	LD28	1560	LD28	1563	LD26
1565	LD26	1566	LD27	1568	LD27	1569	LD27
1572	LD27	1574	LD27	1575	LD27	1576	LD27

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APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

MALES — MEAN BODY WEIGHT VALUES (GRAMS)

	DOSE GROUP	I
	DOSE LEVEL (MG/M3)	0
DAY 25	MEAN	69
	S.D.	9.2
	N	58

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

FEMALES — MEAN BODY WEIGHT VALUES (GRAMS)

		DOSE GROUP	I
		DOSE LEVEL (MG/M3)	0
DAY	25	MEAN	64
		S.D.	8.0
		N	48

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APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF PUP NECROPSY OBSERVATIONS

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
MALES	N	58
THYMUS	N	1
DISCOLORED FOCI	N	1
	%	1.7
KIDNEY	N	2
DILATED RENAL PELVIS	N	2
	%	3.4

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF PUP NECROPSY OBSERVATIONS

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
FEMALES	N	48
BRAIN	N	1
ENLARGED	N	1
	%	2.1
THYMUS	N	1
DISCOLORED FOCI	N	1
	%	2.1
SPLEEN	N	1
ADHESION TO STOMACH	N	1
	%	2.1
LIVER	N	1
ADHESION TO DIAPHRAGM	N	1
	%	2.1

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF PUP NECROPSY OBSERVATIONS

	DOSE GROUP	I
	DOSE LEVEL (MG/M3)	0
FEMALES	N	48

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ABSOLUTE ORGAN WEIGHTS

MALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
FINAL BODY WEIGHT g	MEAN	69
	S.D.	9.2
	N	58
BRAIN g	MEAN	1.4879
	S.D.	.08914
	N	58
SPLEEN g	MEAN	0.2754
	S.D.	.06284
	N	58
THYMUS g	MEAN	0.2827
	S.D.	.06523
	N	58

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ABSOLUTE ORGAN WEIGHTS

FEMALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
FINAL BODY WEIGHT g	MEAN	64
	S.D.	8.0
	N	48
BRAIN g	MEAN	1.4383
	S.D.	.09565
	N	48
SPLEEN g	MEAN	0.2536
	S.D.	.04678
	N	48
THYMUS g	MEAN	0.2840
	S.D.	.06652
	N	48

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APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ORGAN WEIGHT TO BODY WEIGHT RATIO

MALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
FINAL BODY WEIGHT g	MEAN	69
	S.D.	9.2
	N	58
BRAIN Ratio	MEAN	0.0219
	S.D.	.00205
	N	58
SPLEEN Ratio	MEAN	0.0040
	S.D.	.00062
	N	58
THYMUS Ratio	MEAN	0.0041
	S.D.	.00056
	N	58

Huntingdon Life Sciences 00-4204A

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ORGAN WEIGHT TO BODY WEIGHT RATIO

FEMALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
FINAL BODY WEIGHT g	MEAN	64
	S.D.	8.0
	N	48
BRAIN Ratio	MEAN	0.0228
	S.D.	.00247
	N	48
SPLEEN Ratio	MEAN	0.0040
	S.D.	.00056
	N	48
THYMUS Ratio	MEAN	0.0044
	S.D.	.00065
	N	48

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ORGAN WEIGHT TO BRAIN WEIGHT RATIO

MALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
SPLEEN Ratio	MEAN	0.1845
	S.D.	.03671
	N	58
THYMUS Ratio	MEAN	0.1889
	S.D.	.03787
	N	58

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

SUMMARY OF ORGAN WEIGHT TO BRAIN WEIGHT RATIO

FEMALES

DOSE GROUP		I
DOSE LEVEL (MG/M3)		0
SPLEEN Ratio	MEAN	0.1760
	S.D.	.02745
	N	48
THYMUS Ratio	MEAN	0.1966
	S.D.	.04114
	N	48

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP I 0 MG/M3

ANIMAL#	DAY OF STUDY 25
1	89
2	68
3	61
4	71
5	67
6	73
7	61
8	65
9	72
10	66
11	73
12	90
13	67
14	67
15	79
16	67
17	83
18	71
19	69
20	48
21	65
22	58
23	69
24	64
25	84
26	66
27	64
28	66
29	67
30	66
31	72
32	84
33	77
34	67

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL BODY WEIGHTS (GRAMS)

MALES GROUP I 0 MG/M3

ANIMAL#	DAY OF STUDY 25
35	66
36	67
37	67
38	71
39	65
40	75
41	61
42	80
43	84
44	62
45	82
46	51
47	62
48	86
49	62
50	54
51	67
52	70
53	62
54	70
55	60
56	66
57	67
58	47
MEAN	69
S.D.	9.2
N	58

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP I 0 MG/M3

ANIMAL#	DAY OF STUDY 25
59	64
60	76
61	70
62	68
63	70
64	66
65	62
66	69
67	81
68	61
69	53
70	71
71	69
72	61
73	76
74	59
75	65
76	57
77	49
78	50
79	64
80	72
81	60
82	71
83	60
84	60
85	58
86	63
87	59
88	58
89	64
90	64
91	68
92	61

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL BODY WEIGHTS (GRAMS)

FEMALES GROUP I 0 MG/M3

ANIMAL#	DAY OF STUDY 25
93	71
94	64
95	65
96	70
97	50
98	54
99	68
100	74
101	66
102	81
103	61
104	66
105	60
106	43
MEAN	64
S.D.	8.0
N	48

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
1		NO REMARKABLE OBSERVATIONS
2		NO REMARKABLE OBSERVATIONS
3		NO REMARKABLE OBSERVATIONS
4		NO REMARKABLE OBSERVATIONS
5		NO REMARKABLE OBSERVATIONS
6		NO REMARKABLE OBSERVATIONS
7		NO REMARKABLE OBSERVATIONS
8		NO REMARKABLE OBSERVATIONS
9		NO REMARKABLE OBSERVATIONS
10		NO REMARKABLE OBSERVATIONS
11	KIDNEY	DILATED RENAL PELVIS; SLIGHT; RIGHT TISSUE SAVED
12		NO REMARKABLE OBSERVATIONS
13		NO REMARKABLE OBSERVATIONS
14		NO REMARKABLE OBSERVATIONS
15		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
16		NO REMARKABLE OBSERVATIONS
17		NO REMARKABLE OBSERVATIONS
18		NO REMARKABLE OBSERVATIONS
19		NO REMARKABLE OBSERVATIONS
20		NO REMARKABLE OBSERVATIONS
21		NO REMARKABLE OBSERVATIONS
22		NO REMARKABLE OBSERVATIONS
23		NO REMARKABLE OBSERVATIONS
24		NO REMARKABLE OBSERVATIONS
25		NO REMARKABLE OBSERVATIONS
26		NO REMARKABLE OBSERVATIONS
27		NO REMARKABLE OBSERVATIONS
28		NO REMARKABLE OBSERVATIONS
29		NO REMARKABLE OBSERVATIONS
30		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
31		NO REMARKABLE OBSERVATIONS
32		NO REMARKABLE OBSERVATIONS
33		NO REMARKABLE OBSERVATIONS
34	THYMUS	DISCOLORED FOCI; SLIGHT; BILATERAL RED, LESS THAN 0.1 CM IN DIA TISSUE SAVED
35		NO REMARKABLE OBSERVATIONS
36		NO REMARKABLE OBSERVATIONS
37		NO REMARKABLE OBSERVATIONS
38		NO REMARKABLE OBSERVATIONS
39		NO REMARKABLE OBSERVATIONS
40		NO REMARKABLE OBSERVATIONS
41		NO REMARKABLE OBSERVATIONS
42		NO REMARKABLE OBSERVATIONS
43		NO REMARKABLE OBSERVATIONS
44		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
45		NO REMARKABLE OBSERVATIONS
46		NO REMARKABLE OBSERVATIONS
47		NO REMARKABLE OBSERVATIONS
48		NO REMARKABLE OBSERVATIONS
49	KIDNEY	DILATED RENAL PELVIS; SLIGHT; RIGHT TISSUE SAVED
50		NO REMARKABLE OBSERVATIONS
51		NO REMARKABLE OBSERVATIONS
52		NO REMARKABLE OBSERVATIONS
53		NO REMARKABLE OBSERVATIONS
54		NO REMARKABLE OBSERVATIONS
55		NO REMARKABLE OBSERVATIONS
56		NO REMARKABLE OBSERVATIONS
57		NO REMARKABLE OBSERVATIONS
58		NO REMARKABLE OBSERVATIONS
59		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
60		NO REMARKABLE OBSERVATIONS
61		NO REMARKABLE OBSERVATIONS
62		NO REMARKABLE OBSERVATIONS
63		NO REMARKABLE OBSERVATIONS
64		NO REMARKABLE OBSERVATIONS
65		NO REMARKABLE OBSERVATIONS
66		NO REMARKABLE OBSERVATIONS
67		NO REMARKABLE OBSERVATIONS
68		NO REMARKABLE OBSERVATIONS
69		NO REMARKABLE OBSERVATIONS
70		NO REMARKABLE OBSERVATIONS
71		NO REMARKABLE OBSERVATIONS
72		NO REMARKABLE OBSERVATIONS
73		NO REMARKABLE OBSERVATIONS
74		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
75		NO REMARKABLE OBSERVATIONS
76		NO REMARKABLE OBSERVATIONS
77		NO REMARKABLE OBSERVATIONS
78		NO REMARKABLE OBSERVATIONS
79		NO REMARKABLE OBSERVATIONS
80		NO REMARKABLE OBSERVATIONS
81		NO REMARKABLE OBSERVATIONS
82		NO REMARKABLE OBSERVATIONS
83		NO REMARKABLE OBSERVATIONS
84		NO REMARKABLE OBSERVATIONS
85		NO REMARKABLE OBSERVATIONS
86		NO REMARKABLE OBSERVATIONS
87		NO REMARKABLE OBSERVATIONS
88		NO REMARKABLE OBSERVATIONS
89		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
90		NO REMARKABLE OBSERVATIONS
91		NO REMARKABLE OBSERVATIONS
92		NO REMARKABLE OBSERVATIONS
93		NO REMARKABLE OBSERVATIONS
94		NO REMARKABLE OBSERVATIONS
95		NO REMARKABLE OBSERVATIONS
96	BRAIN	ENLARGED; MODERATE CAUDAL AND ROSTRAL COLLICULUS HEMISPHERES REDUCED SLIGHTLY - BILATERAL TISSUE SAVED
	THYMUS	DISCOLORED FOCI; MODERATE; BILATERAL RED, 0.1 CM IN DIA TISSUE SAVED
	SPLEEN	ADHESION TO STOMACH; EXTREME SEROSA TISSUE SAVED
97	LIVER	ADHESION TO DIAPHRAGM; SLIGHT MEDIAN LOBE TISSUE SAVED
98		NO REMARKABLE OBSERVATIONS
99		NO REMARKABLE OBSERVATIONS

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

INDIVIDUAL PUP NECROPSY OBSERVATIONS

GROUP I 0 MG/M3

ANIMAL#	ORGAN	OBSERVATION
100		NO REMARKABLE OBSERVATIONS
101		NO REMARKABLE OBSERVATIONS
102		NO REMARKABLE OBSERVATIONS
103		NO REMARKABLE OBSERVATIONS
104		NO REMARKABLE OBSERVATIONS
105		NO REMARKABLE OBSERVATIONS
106		NO REMARKABLE OBSERVATIONS

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APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

ORGAN AND FINAL BODY WEIGHTS

MALES GROUP I 0 MG/M3

Animal Number	FINAL BODY WEIGHT g	BRAIN Weight g	BRAIN %FBW	SPLEEN Weight g	SPLEEN %FBW	SPLEEN %Brain	THYMUS Weight g	THYMUS %FBW	THYMUS %Brain
1	89	1.5257	0.0172	0.2981	0.0034	0.1954	0.4048	0.0046	0.2653
2	68	1.4665	0.0216	0.2619	0.0039	0.1786	0.3010	0.0044	0.2053
3	61	1.3564	0.0224	0.2318	0.0038	0.1709	0.2608	0.0043	0.1923
4	71	1.5070	0.0213	0.2418	0.0034	0.1605	0.3111	0.0044	0.2064
5	67	1.4432	0.0215	0.2086	0.0031	0.1445	0.2927	0.0044	0.2028
6	73	1.5128	0.0209	0.2256	0.0031	0.1491	0.3525	0.0049	0.2330
7	61	1.3825	0.0227	0.2575	0.0042	0.1863	0.2173	0.0036	0.1572
8	65	1.4508	0.0224	0.2373	0.0037	0.1636	0.2605	0.0040	0.1796
9	72	1.4686	0.0203	0.2527	0.0035	0.1721	0.3244	0.0045	0.2209
10	66	1.5300	0.0230	0.2502	0.0038	0.1635	0.2276	0.0034	0.1488
11	73	1.6465	0.0226	0.2752	0.0038	0.1671	0.3011	0.0041	0.1829
12	90	1.5218	0.0168	0.3464	0.0038	0.2276	0.4228	0.0047	0.2778
13	67	1.4741	0.0219	0.2431	0.0036	0.1649	0.2971	0.0044	0.2015
14	67	1.5145	0.0225	0.2141	0.0032	0.1414	0.3058	0.0045	0.2019
15	79	1.5818	0.0201	0.3638	0.0046	0.2300	0.3530	0.0045	0.2232
16	67	1.4283	0.0213	0.2888	0.0043	0.2022	0.2335	0.0035	0.1635
17	83	1.5235	0.0183	0.2734	0.0033	0.1795	0.3478	0.0042	0.2283
18	71	1.4727	0.0207	0.3583	0.0050	0.2433	0.2906	0.0041	0.1973
19	69	1.3950	0.0202	0.2930	0.0043	0.2100	0.2410	0.0035	0.1728
20	48	1.3174	0.0274	0.2125	0.0044	0.1613	0.1547	0.0032	0.1174
21	65	1.4608	0.0224	0.2666	0.0041	0.1825	0.2833	0.0044	0.1939
22	58	1.4396	0.0249	0.2476	0.0043	0.1720	0.1922	0.0033	0.1335
23	69	1.5329	0.0221	0.2895	0.0042	0.1889	0.2960	0.0043	0.1931
24	64	1.4417	0.0224	0.2240	0.0035	0.1554	0.2203	0.0034	0.1528
25	84	1.6530	0.0198	0.4330	0.0052	0.2619	0.3652	0.0044	0.2209
26	66	1.4619	0.0223	0.2261	0.0034	0.1547	0.3453	0.0053	0.2362
27	64	1.4607	0.0230	0.2584	0.0041	0.1769	0.2600	0.0041	0.1780
28	66	1.4224	0.0216	0.2938	0.0045	0.2066	0.2479	0.0038	0.1743
29	67	1.5159	0.0225	0.2348	0.0035	0.1549	0.3374	0.0050	0.2226
30	66	1.4898	0.0227	0.2332	0.0035	0.1565	0.1981	0.0030	0.1330
31	72	1.5665	0.0216	0.2484	0.0034	0.1586	0.2496	0.0034	0.1593
32	84	1.7304	0.0206	0.3429	0.0041	0.1982	0.3099	0.0037	0.1791
33	77	1.6022	0.0209	0.2801	0.0037	0.1748	0.3219	0.0042	0.2009
34	67	1.5285	0.0230	0.1983	0.0030	0.1297	0.2444	0.0037	0.1599

%FBW = ORGAN WEIGHT/BODY WEIGHT %Brain = ORGAN WEIGHT/BRAIN WEIGHT

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

ORGAN AND FINAL BODY WEIGHTS

MALES GROUP I 0 MG/M3

Animal Number	FINAL BODY WEIGHT g	BRAIN Weight g	BRAIN %FBW	SPLEEN Weight g	SPLEEN %FBW	SPLEEN %Brain	THYMUS Weight g	THYMUS %FBW	THYMUS %Brain
35	66	1.5540	0.0235	0.2119	0.0032	0.1364	0.2115	0.0032	0.1361
36	67	1.5823	0.0236	0.2800	0.0042	0.1770	0.2904	0.0043	0.1835
37	67	1.5152	0.0225	0.2732	0.0041	0.1803	0.3238	0.0048	0.2137
38	71	1.5366	0.0217	0.2422	0.0034	0.1576	0.2729	0.0039	0.1776
39	65	1.4971	0.0230	0.3061	0.0047	0.2045	0.2808	0.0043	0.1876
40	75	1.6466	0.0219	0.3228	0.0043	0.1960	0.3290	0.0044	0.1998
41	61	1.3847	0.0226	0.2625	0.0043	0.1896	0.2017	0.0033	0.1457
42	80	1.5560	0.0196	0.4205	0.0053	0.2702	0.3655	0.0046	0.2349
43	84	1.5910	0.0190	0.4265	0.0051	0.2681	0.4073	0.0049	0.2560
44	62	1.4260	0.0229	0.2779	0.0045	0.1949	0.2736	0.0044	0.1919
45	82	1.5792	0.0193	0.3101	0.0038	0.1964	0.4110	0.0050	0.2603
46	51	1.3053	0.0258	0.1928	0.0038	0.1477	0.1738	0.0034	0.1331
47	62	1.4106	0.0229	0.3148	0.0051	0.2232	0.2359	0.0038	0.1672
48	86	1.5872	0.0185	0.5035	0.0059	0.3172	0.3992	0.0047	0.2515
49	62	1.4499	0.0232	0.2171	0.0035	0.1497	0.2879	0.0046	0.1986
50	54	1.3477	0.0249	0.2089	0.0039	0.1550	0.1842	0.0034	0.1367
51	67	1.4519	0.0216	0.2658	0.0040	0.1831	0.2585	0.0038	0.1780
52	70	1.4871	0.0212	0.3071	0.0044	0.2065	0.3075	0.0044	0.2068
53	62	1.3772	0.0222	0.2969	0.0048	0.2156	0.2555	0.0041	0.1855
54	70	1.5274	0.0217	0.2444	0.0035	0.1600	0.2653	0.0038	0.1737
55	60	1.3234	0.0221	0.2528	0.0042	0.1910	0.2577	0.0043	0.1947
56	66	1.5201	0.0232	0.2493	0.0038	0.1640	0.2570	0.0039	0.1691
57	67	1.4811	0.0221	0.3012	0.0045	0.2034	0.2470	0.0037	0.1668
58	47	1.3349	0.0285	0.1753	0.0037	0.1313	0.1259	0.0027	0.0943

%FBW = ORGAN WEIGHT/BODY WEIGHT %Brain = ORGAN WEIGHT/BRAIN WEIGHT

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

ORGAN AND FINAL BODY WEIGHTS

FEMALES GROUP I 0 MG/M3

Animal Number	FINAL BODY WEIGHT g	BRAIN Weight g	BRAIN %FBW	SPLEEN Weight g	SPLEEN %FBW	SPLEEN %Brain	THYMUS Weight g	THYMUS %FBW	THYMUS %Brain
59	64	1.4145	0.0223	0.2330	0.0037	0.1647	0.3104	0.0049	0.2194
60	76	1.6069	0.0210	0.2957	0.0039	0.1840	0.3700	0.0048	0.2303
61	70	1.5384	0.0221	0.3135	0.0045	0.2038	0.3070	0.0044	0.1996
62	68	1.4877	0.0219	0.2613	0.0038	0.1756	0.3192	0.0047	0.2146
63	70	1.5157	0.0218	0.2250	0.0032	0.1484	0.3615	0.0052	0.2385
64	66	1.4781	0.0223	0.2291	0.0035	0.1550	0.3271	0.0049	0.2213
65	62	1.4547	0.0236	0.2721	0.0044	0.1870	0.3129	0.0051	0.2151
66	69	1.4805	0.0215	0.2195	0.0032	0.1483	0.3373	0.0049	0.2278
67	81	1.5685	0.0193	0.4412	0.0054	0.2813	0.3982	0.0049	0.2539
68	61	1.4188	0.0232	0.2382	0.0039	0.1679	0.3019	0.0049	0.2128
69	53	1.3136	0.0247	0.2267	0.0043	0.1726	0.1989	0.0037	0.1514
70	71	1.5887	0.0225	0.3041	0.0043	0.1914	0.3203	0.0045	0.2016
71	69	1.5191	0.0220	0.2190	0.0032	0.1442	0.3263	0.0047	0.2148
72	61	1.4818	0.0243	0.1828	0.0030	0.1234	0.2303	0.0038	0.1554
73	76	1.5259	0.0200	0.3284	0.0043	0.2152	0.3473	0.0046	0.2276
74	59	1.4635	0.0249	0.2317	0.0039	0.1583	0.2135	0.0036	0.1459
75	65	1.4455	0.0224	0.3144	0.0049	0.2175	0.3249	0.0050	0.2248
76	57	1.3104	0.0229	0.2555	0.0045	0.1950	0.1957	0.0034	0.1493
77	49	1.2613	0.0260	0.2224	0.0046	0.1763	0.1409	0.0029	0.1117
78	50	1.3561	0.0272	0.2142	0.0043	0.1580	0.1435	0.0029	0.1058
79	64	1.4855	0.0231	0.2313	0.0036	0.1557	0.3073	0.0048	0.2069
80	72	1.5107	0.0211	0.2557	0.0036	0.1693	0.3275	0.0046	0.2168
81	60	1.3510	0.0226	0.2345	0.0039	0.1736	0.3141	0.0053	0.2325
82	71	1.5629	0.0220	0.2949	0.0042	0.1887	0.3803	0.0054	0.2433
83	60	1.4062	0.0233	0.1890	0.0031	0.1344	0.2637	0.0044	0.1875
84	60	1.3945	0.0233	0.2124	0.0036	0.1523	0.2488	0.0042	0.1784
85	58	1.4188	0.0244	0.2319	0.0040	0.1634	0.2359	0.0041	0.1663
86	63	1.4496	0.0232	0.2633	0.0042	0.1816	0.2663	0.0043	0.1837
87	59	1.3727	0.0232	0.1962	0.0033	0.1429	0.2369	0.0040	0.1726
88	58	1.4192	0.0246	0.2345	0.0041	0.1652	0.2380	0.0041	0.1677
89	64	1.4477	0.0226	0.2829	0.0044	0.1954	0.3117	0.0049	0.2153
90	64	1.4544	0.0227	0.2689	0.0042	0.1849	0.3436	0.0054	0.2362
91	68	1.5391	0.0227	0.2377	0.0035	0.1544	0.2785	0.0041	0.1809
92	61	1.3892	0.0226	0.2350	0.0038	0.1692	0.2083	0.0034	0.1499

%FBW = ORGAN WEIGHT/BODY WEIGHT %Brain = ORGAN WEIGHT/BRAIN WEIGHT

APPENDIX AA - RELEASED PUP DATA

GASOLINE ETBE VAPOR CONDENSATE: A ONE-GENERATION WHOLE-BODY
INHALATION REPRODUCTION TOXICITY STUDY IN RATS
(GROUP I RELEASED PUPS)

ORGAN AND FINAL BODY WEIGHTS

FEMALES GROUP I 0 MG/M3

Animal Number	FINAL BODY WEIGHT g	BRAIN Weight g	BRAIN %FBW	SPLEEN Weight g	SPLEEN %FBW	SPLEEN %Brain	THYMUS Weight g	THYMUS %FBW	THYMUS %Brain
93	71	1.5351	0.0217	0.2457	0.0035	0.1601	0.3180	0.0045	0.2072
94	64	1.3369	0.0210	0.2467	0.0039	0.1845	0.2823	0.0044	0.2112
95	65	1.4119	0.0219	0.2930	0.0045	0.2075	0.2835	0.0044	0.2008
96	70	1.0805	0.0155	0.2041	0.0029	0.1889	0.3101	0.0044	0.2870
97	50	1.3072	0.0261	0.2344	0.0047	0.1793	0.1823	0.0036	0.1395
98	54	1.2945	0.0241	0.2325	0.0043	0.1796	0.2322	0.0043	0.1794
99	68	1.4640	0.0214	0.2459	0.0036	0.1680	0.2518	0.0037	0.1720
100	74	1.4951	0.0202	0.3263	0.0044	0.2182	0.4067	0.0055	0.2720
101	66	1.4726	0.0222	0.2537	0.0038	0.1723	0.2669	0.0040	0.1812
102	81	1.5278	0.0189	0.3424	0.0042	0.2241	0.4412	0.0054	0.2888
103	61	1.4147	0.0234	0.2294	0.0038	0.1622	0.2091	0.0035	0.1478
104	66	1.4240	0.0216	0.2175	0.0033	0.1527	0.2425	0.0037	0.1703
105	60	1.4217	0.0237	0.2866	0.0048	0.2016	0.2450	0.0041	0.1723
106	43	1.4223	0.0333	0.2165	0.0051	0.1522	0.2122	0.0050	0.1492

%FBW = ORGAN WEIGHT/BODY WEIGHT %Brain = ORGAN WEIGHT/BRAIN WEIGHT

	Historical Control Data Summary of Mean Pup Body Weights/Litter	Appendix AA

Study No.		Lactation Day					
		1	4	7	14	21	28
00-4202	Mean	7.2	10.4	14.5	26.0	42.5	78.8
	S.D.	0.52	1.03	1.23	1.68	3.87	5.12
	N	23	22	22	22	22	22
00-4203	Mean	7.3	10.6	14.7	25.6	41.3	76.7
	S.D.	0.48	0.98	1.50	2.25	3.97	6.16
	N	25	25	25	25	25	25
00-4207	Mean	7.0	10.4	14.6	24.4	40.7	69.5
	S.D.	0.75	1.36	1.70	2.31	3.99	7.40
	N	24	24	24	24	24	24
00-4208	Mean	6.9	9.7	13.5	23.7	38.7	72.6
	S.D.	0.67	0.98	1.13	1.78	3.47	5.60
	N	23	23	23	23	23	23
Overall	**Mean**	**7.1**	**10.3**	**14.3**	**25.0**	**40.8**	**74.3**
	S.D.	**0.64**	**1.13**	**1.48**	**2.20**	**4.01**	**7.04**
	N	**95**	**94**	**94**	**94**	**94**	**94**

	Historical Control Data Summary of Pup Necropsy Observations	Appendix AA

Study Number Rat Strain: Sprague-Dawley [Crl: CD IGS BR]	00-4202	00-4203	00-4207	00-4208	Total
Total # male pups	114	117	117	137	485
Total # female pups	127	112	117	100	456
Total # undetermined	0	1	0	0	1
Stillborn	2	5	8	1	16
Lungs: floatation test - stillborn negative	2	5	6	1	14
Stomach: no milk present	0	4	6	1	11
Stomach: milk undetermined	2	1	2	0	5
Gross exam: autolysis	2	0	0	0	2
Gross exam: cannibalized	1	1	2	0	4
Gross exam: internal sex undetermined	1	1	0	0	2
Abdominal cavity: fluid filled	0	1	0	0	1
Skin: discolored area	0	1	0	0	1
Skin: edematous - general	0	1	0	0	1
Died prior to Cull	16	0	7	6	29
No remarkable observation	14	0	0	0	14
Lungs: floatation test - found dead, positive	0	0	2	2	4
Stomach: milk present	1	0	3	4	8
Stomach: no milk present	0	0	3	1	4
Head: skull damaged	0	0	0	0	0
Gross exam: autolysis	1	0	1	1	3
Day 4 Cull	93	75	80	97	345
No remarkable observation	93	75	80	97	345
Died prior to 28 Day Sacrifice	0	0	1	0	1
Head: skull damage	0	0	1	0	1
Stomach: milk present	0	0	1	0	1
Day 28 Sacrifice	130	150	138	133	551
No remarkable observation	127	136	130	126	519
Epididymides: small	0	0	0	1	1
External exam: left hindpaw missing	0	1	0	0	1
Eyes: damaged	0	0	1	0	1

	Historical Control Data Summary of Pup Necropsy Observations	Appendix AA

Study Number Rat Strain: Sprague-Dawley [Crl: CD IGS BR]	00-4202	00-4203	00-4207	00-4208	Total
Gross exam: cannibalized	0	0	2	0	2
Kidney: cystic	3	6	3	6	18
Kidney: dilated pelvis	0	6	0	1	7
Liver: discolored foci	0	0	1	0	1
Skin: alopecia - general	0	0	1	0	1
Testes: small	0	0	0	1	1
Testes: undescended, unilateral	0	1	0	0	1

Males	Historical Control Data Summary of Mean Pup Organ Weights	Appendix AA

Study No.		TBW (g)	Brain Wt. (g)	Brain ORG/ TBW (%)	Spleen WT (g)	Spleen ORG/ TBW (%)	Spleen ORG/ BRAIN (%)	Thymus WT (g)	Thymus ORG/ TBW (%)	Thymus ORG/ BRAIN (%)
00-4202	Mean	82.3	1.5825	1.9312	0.3245	0.3951	20.514	0.3586	0.4392	22.655
	S.D.	6.4	0.0629	0.1263	0.0500	0.0588	3.142	0.0547	0.0512	3.381
	N	22	22	22	22	22	22	22	22	22
00-4203	Mean	81.8	1.6118	1.9785	0.3445	0.4210	21.381	0.3673	0.4499	22.754
	S.D.	6.8	0.0713	0.1305	0.0477	0.0472	2.845	0.0887	0.1105	5.300
	N	25	25	25	25	25	25	25	25	25
00-4207	Mean	72.7	1.5939	2.2127	0.2792	0.3850	17.589	0.3238	0.4471	20.489
	S.D.	8.1	0.1572	0.2845	0.0491	0.0613	3.031	0.0788	0.1076	5.486
	N	23	23	23	23	23	23	23	23	23
00-4208	Mean	75.6	1.5634	2.0757	0.3218	0.4258	20.582	0.3322	0.4389	21.234
	S.D.	5.6	0.0591	0.1267	0.0484	0.0589	3.031	0.0600	0.0718	3.687
	N	22	22	22	22	22	22	22	22	22
Overall	**Mean**	**78.2**	**1.5888**	**2.0490**	**0.3180**	**0.4067**	**20.035**	**0.3459**	**0.4440**	**21.801**
	S.D.	**7.9**	**0.0967**	**0.2077**	**0.0537**	**0.0584**	**3.300**	**0.0737**	**0.0885**	**4.626**
	N	**92**	**92**	**92**	**92**	**92**	**92**	**92**	**92**	**92**

TBW=Terminal Body Weight; ORG=Organ Weight

Females	Historical Control Data Summary of Mean Pup Organ Weights	Appendix AA

Study No.		TBW (g)	Brain Wt. (g)	Brain ORG/ TBW (%)	Spleen Wt. (g)	Spleen ORG/ TBW (%)	Spleen ORG/ BRAIN (%)	Thymus WT (g)	Thymus ORG/ TBW (%)	Thymus ORG/ BRAIN (%)
00-4202	Mean	76.7	1.5323	2.0070	0.2884	0.3741	18.875	0.3836	0.5005	25.068
	S.D.	5.5	0.0671	0.1472	0.0681	0.0702	4.548	0.0468	0.0486	3.049
	N	22	22	22	22	22	22	22	22	22
00-4203	Mean	75.1	1.5506	2.0750	0.3043	0.4041	19.597	0.3459	0.4384	22.301
	S.D.	6.36	0.0631	0.1576	0.0559	0.0606	3.307	0.0466	0.1045	2.830
	N	25	25	25	25	25	25	25	25	25
00-4207	Mean	67.4	1.5015	2.2454	0.2440	0.3613	16.388	0.3253	0.4869	21.854
	S.D.	6.87	0.1191	0.2698	0.0473	0.0564	3.713	0.0884	0.1423	6.683
	N	23	23	23	23	23	23	23	23	23
00-4208	Mean	69.9	1.5284	2.1971	0.2831	0.4058	18.506	0.3420	0.4891	22.349
	S.D.	5.90	0.0688	0.1724	0.0428	0.0573	2.541	0.0607	0.0805	3.704
	N	22	22	22	22	22	22	22	22	22
Overall	**Mean**	**72.3**	**1.5287**	**2.1305**	**0.2803**	**0.3867**	**18.3614**	**0.3488**	**0.4775**	**22.862**
	S.D.	**7.1**	**0.0833**	**0.2120**	**0.0580**	**0.0633**	**3.7352**	**0.0653**	**0.1020**	**4.450**
	N	**92**	**92**	**92**	**92**	**92**	**92**	**92**	**92**	**92**

	Sperm Analysis Report	Appendix BB

AUDITED FINAL REPORT

Study Phase: Sperm Analysis

Test Site Phase Reference Number 93075219

Testing Facility Study Number 00-4204

Sponsor Reference Number 211-ETBE-1G

Gasoline ETBE Vapor Condensate: A One-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats

TEST SITE:
Charles River Laboratories, Pathology Associates - Maryland
15 Worman's Mill Court, Suite I
Frederick, MD 21701

TESTING FACILITY:
Huntington Life Sciences (HLS)
Mettlers Road
P.O. Box 2360
East Millstone, NJ 08875-2360

SPONSOR:
American Petroleum Institute (API)
1220 L Street, Northwest
Washington, D.C. 20005-4070

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I. QUALITY ASSURANCE STATEMENT

Gasoline ETBE Vapor Condensate:
A One-Generation Whole-Body Inhalation
Reproduction Toxicity Study in Rats

Study Number: 00-4204

QUALITY ASSURANCE STATEMENT

This sperm analysis project has been inspected and audited by the Pathology Associates (PA) Quality Assurance Unit (QAU) as required by the Good Laboratory Practice (GLP) regulations promulgated by the U.S. Environmental Protection Agency (EPA). The sperm analysis report is an accurate reflection of the recorded data. The following table is a record of the inspections/audits performed and reported by the QAU.

Date of Inspection	Phase Inspected	Date Findings Reported to Research Scientist/ PA Management	Date Findings Reported to Study Director/Study Director Management
19-Jul-2002	Sperm Motility	22-Jul-2002	08-Aug-2002
07-Aug-2002	Individual Animal Data	07-Aug-2002	08-Aug-2002
07-Aug-2002	Draft Sperm Analysis Report	07-Aug-2002	08-Aug-2002
04-Sep-2002	2nd Draft Sperm Analysis Report	04-Sep-2002	04-Sep-2002
30-Sep-2002	3rd Draft Sperm Analysis Report	30-Sep-2002	30-Sep-2002
29-Mar-2009	Final Sperm Analysis Report	31-Mar-2009	02-Apr-2009

Thomas W. Dalton

Thomas W. Dalton
Senior Quality Assurance Auditor

10-Apr-2009

Date

Gasoline ETBE Vapor Condensate:
A One-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats

II. MATERIALS AND METHODS

A. Sample Collection

All surviving male rats were euthanized by exsanguination following anesthesia with inhaled carbon dioxide after the last F_1 litters were delivered. For all animals, the abdominal cavity was opened and the reproductive organs exposed. For motility assessment, the left vas deferens was dissected away from the testis and immediately placed in a petri dish containing 10 ml of a solution consisting of 1% Bovine Serum Albumin dissolved in Phosphate Buffered Saline. The solution was prewarmed to a temperature of approximately 38°C. A minimum 3-minute period was allowed for the sperm to swim out.

For total sperm count assessment, the left epididymis and left testis were then removed and placed on dry ice. The frozen epididymides and testes were then transferred to Pathology Associates - A Charles River Company (formerly known as Pathology Associates International until January 8, 2001), Frederick, MD. and stored frozen at -70°C until evaluation for caudal epididymal sperm count and homogenization-resistant testicular sperm count.

Only the control and high-exposure animals were examined for percent motility, total epididymal and testicular sperm count, sperm morphology and caudal epididymis weight.

B. Sperm Motility Evaluation

Following the swim out period, a sperm sample was obtained using a 100 μm deep cannula. The cannula was immediately loaded into the prewarmed stage of the Hamilton Thorne IVOS automated sperm analyzer (version 12.1.c). The analyzer automatically selected five fields and each motion image was digitally saved and permanently stored on optical media. The images were subsequently analyzed and the percent motility determined for each animal.

C. Caudal Epididymis Weight and Total Sperm Count Determination

Each frozen epididymis was removed from the freezer, thawed and the caudal section was trimmed and weighed. Each frozen

testis was removed from the freezer, thawed, the tunica removed and the testicular parenchyma weighed. The cauda epididymis and testicular parenchyma were homogenized in deionized water and the suspensions were transferred to plastic test tubes and vortexed. A 100 μl sample was transferred to a violet reaction vial containing a Hoechst dye (H33342) which uniquely stains the head of the sperm. A sample of the stained sperm was placed into a 20 μm deep Cell-Vu glass slide which was loaded into the analyzer. Twenty fields were automatically selected by the analyzer for each animal and the number of homogenization-resistant sperm and cauda epididymal sperm determined. The counts reported were adjusted for caudal epididymal or testicular weight.

D. Sperm Morphology Evaluation

Two Eosin stained slides were prepared for each animal from the caudal epididymis total count preparation. The slides were evaluated and a minimum of 200 sperm cells/animal was examined for morphological development.

E. Statistical Analyses

The means and standard deviations for the sperm motility, caudal epididymal sperm count, testicular homogenization-resistant spermatid count and sperm morphology data were calculated and compared across groups using the Kruskal-Wallis nonparametric ANOVA test. If a significant effect occurred ($p<0.05$), the Mann-Whitney U test was used for pair-wise comparisons of each treated group to the control group. Animals with fewer than 25 sperm cells present in the motility analysis were excluded from the group mean calculation and subsequent statistical analysis. Animals with at least 25 sperm cells were included in the group mean calculation subsequent and statistical analysis; however, animals with fewer than 50 cells were identified to have a low count. The mean caudal epididymis weight for each group was calculated and compared using one-way analysis of variance (ANOVA) technique. If ANOVA is significant, Dunnett's test was used for pair-wise comparisons of each treated group to the control group at the 5% and 1% risk levels. Statistical analyses were performed using an IBM™ compatible computer with SAS computer programs (SAS/STAT User's Guide, 1989).

F. GLP Compliance Statement

The portion of this study performed by PAI was conducted in compliance with US EPA 79.60, CFR Vol. 59, No. 122, 27 June 1994.

G. Sample and Data Archiving

Frozen epididymis and testis samples not processed for sperm count determination were transferred to and stored frozen at -70°C in PAI's long-term archive facility. The optical media used for permanent storage of the sperm motility images, raw data printouts from the sperm motility, epididymal and testicular sperm count and sperm morphology analysis, as well as any supporting documentation and the sperm morphology slides will be maintained at PAI until the study has been completed. Upon finalizing the report, all non-frozen study material will be returned to HLS for archiving. Disposition of the frozen tissue samples will be directed by correspondence from HLS.

III. RESULTS

A. Sperm Motility

Table 1 (Summary Data)
Appendix A (Individual Data)

No apparent treatment-related effects were observed in the sperm motility data. Group mean values were 96% and 94% for the control and high-exposure groups, respectively.

B. Total Sperm Count

Table 1 (Summary Data)
Appendix A (Individual Data)

The number of sperm per gram of caudal epididymis and testis was comparable between the control and high-exposure groups. Group mean values were 956.7 and 1053.0 million sperm/gram for the epididymal sperm count and 105.7 and 106.5 million sperm/gram for the homogenization-resistant testicular count.

C. Sperm Morphology

Table 1 (Summary Data)
Appendix B (Individual Data)

A low incidence of head/tail abnormalities was observed for animals in the control and high-exposure groups. Group mean values were 0.8 and 0.6 percent abnormal sperm. No treatment related differences were observed.

D. Caudal Epididymis Weight

Table 1 (Summary Data)

Appendix A (Individual Data)

No apparent treatment-related effects were observed in the caudal epididymis weight data. Group mean values were 0.27 and 0.28 grams. No biologically meaningful differences were observed.

IV. DISCUSSION AND CONCLUSIONS

Mean percent motility, epididymal sperm count, homogenization-resistant testicular sperm count, sperm morphology and caudal epididymis weight were not affected by treatment with Gasoline ETBE Vapor Condensate at an exposure level of 20,000 mg/m^3. No biologically meaningful differences were observed between the study groups.

Jeffrey A. Smith, M.S.
Research Scientist
Charles River Laboratories
Pathology Associates - Maryland

10-Apr-2009
Date

V. REFERENCES

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Kruskal, W.H. 1957. Historical notes on the Wilcoxon unpaired two-sample test. Journal of the American Statistical Association 52: 356-360.

SAS/STAT User's Guide, 1989a. SAS Institute Inc., Version 6, Fourth Edition, Cary, NC:SAS Institute Inc., 1989. Vol. 1, p. 209-244. Vol. 2 p. 1195-1210.

HLS STUDY NO.: 00-4204

TABLE 1

GASOLINE ETBE VAPOR CONDENSATE:
A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

SUMMARY OF MALE REPRODUCTIVE PARAMETERS

Group:	I	IV
Exposure Level: GETBEVC[a] (mg/m^3)	0	20,000
MOTILITY (%)		
Mean	96	94
SD	3	5
N	25	26
EPIDIDYMAL COUNT (MILLION SPERM/GRAM)		
Mean	956.7	1053.0
SD	164.8	215.1
N	26	26
TESTICULAR COUNT (MILLION SPERM/GRAM)		
Mean	105.7	106.5
SD	21.3	21.0
N	26	26
SPERM MORPHOLOGY[b] (% ABNORMAL)		
Mean	0.8	0.6
SD	0.8	0.6
N	26	26
CAUDAL EPIDIDYMIS WEIGHTS (GRAM)		
Mean	0.27	0.28
SD	0.03	0.03
N	26	26

[a]GASOLINE ETBE VAPOR CONDENSATE.
[b]MEAN AND STANDARD DEVIATIONS WERE CALCULATED USING THE TOTAL NUMBER OF ABNORMAL SPERM AS A PERCENTAGE OF THE NUMBER OF SPERM EXAMINED.

NONE SIGNIFICANTLY DIFFERENT FROM CONTROL.

HLS STUDY NO.: 00-4204

APPENDIX A

GASOLINE ETBE VAPOR CONDENSATE:
A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

INDIVIDUAL CAUDAL EPIDIDYMIS WEIGHT,
SPERM MOTILITY AND SPERM COUNT DATA

Group I: 0 mg/m^3 (GASOLINE ETBE VAPOR CONDENSATE)

Animal No.	Caudal Epididymis Weight (g)	Motility (%)	SPERM COUNT Caudal Epididymal (million sperm/gram)	SPERM COUNT Homogenization Resistant Testicular (million sperm/gram)
1051	0.28	98	870.1	88.1
1052	0.24	91	954.1	98.3
1053	0.23	93	1227.5	91.9
1054	0.27	100	910.1	114.1
1055	0.20	97	705.8	105.3
1056	0.23	98	1036.5	146.9
1057	0.28	100	780.5	151.1
1058	0.26	96	949.1	69.7
1059	0.29	95	739.2	79.6
1060	0.29	99	1016.8	79.1
1061	0.25	93	803.0	91.1
1062	0.28	90	690.9	140.4
1063	0.34	93	925.7	75.2
1064	0.26	99	1089.9	107.3
1065	0.25[b]	[a]	949.4[b]	106.9
1066	0.27	95	844.3	117.7
1067	0.27	99	1192.8	139.4
1068	0.27	97	1045.6	109.0
1069	0.32	92	1035.8	103.9
1070	0.28	87	1041.9	97.0
1071	0.28	99	1120.3	111.7
1072	0.25	97	1183.7	119.0
1073	0.24	96	1172.0	99.5
1074	0.27	99	619.6	97.1
1075	0.27	96	1014.7	115.0
1076	0.23	92	954.7	94.3

[a]NO SPERM PRESENT FOR ANALYSIS.
[b]LEFT EPIDIDYMIS AND LEFT TESTIS PRESERVED FOR POSSIBLE HISTOPATHOLOGICAL EVALUATION; RIGHT EPIDIDYMIS AND RIGHT TESTIS USED FOR SPERM COUNT DETERMINATION.

HLS STUDY NO.: 00-4204

APPENDIX A

GASOLINE ETBE VAPOR CONDENSATE:
A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

INDIVIDUAL CAUDAL EPIDIDYMIS WEIGHT,
SPERM MOTILITY AND SPERM COUNT DATA

Group IV: 20,000 mg/m^3 (GASOLINE ETBE VAPOR CONDENSATE)

Animal No.	Caudal Epididymis Weight (g)	Motility (%)	SPERM COUNT Caudal Epididymal (million sperm/gram)	SPERM COUNT Homogenization Resistant Testicular (million sperm/gram)
4051	0.28	94	1105.4	101.0
4052	0.30	97	962.0	88.4
4053	0.29	94	1305.2	76.9
4054	0.23	97	1272.9	94.2
4055	0.19	79	627.4	77.8
4056	0.30	99	930.6	82.7
4057	0.26	88	1351.3	120.5
4058	0.25	94	819.8	97.8
4059	0.28	88	903.7	93.3
4060	0.32	98	1195.9	93.2
4061	0.28	96	1198.7	92.2
4062	0.28	97	1333.2	122.6
4063	0.23	96	836.5	144.0
4064	0.30	89	1153.7	77.0
4065	0.21	95	1050.6	110.2
4066	0.28	97	1056.8	105.3
4067	0.27	93	867.5	128.7
4068	0.32	97	1392.0	87.8
4069	0.29	96	1117.7	108.7
4070	0.25	95	1292.4	144.3
4071	0.30	98	1104.9	105.2
4072	0.30	87	1164.1	126.2
4073	0.32	98	630.6	108.4
4074	0.28	94	847.7	121.0
4075	0.29	100	1020.4	151.0
4076	0.25	88	836.5	110.1

HLS STUDY NO.: 00-4204

APPENDIX B

GASOLINE ETBE VAPOR CONDENSATE:
A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

INDIVIDUAL SPERM MORPHOLOGY DATA

Group I: 0 mg/m^3 (GASOLINE ETBE VAPOR CONDENSATE)

Animal No.	Normal	Head: Amorphous	Head: Small	Head: Enlarged	Head: Double	Tail: Coiled	Tail: Bent	Tail: Double	Other
1051	200	0	0	0	0	0	0	0	0
1052	200	0	0	0	0	0	0	0	0
1053	199	1	0	0	0	0	0	0	0
1054	196	4	0	0	0	0	0	0	0
1055	198	2	0	0	0	0	0	0	0
1056	198	2	0	0	0	0	0	0	0
1057	200	0	0	0	0	0	0	0	0
1058	199	1	0	0	0	0	0	0	0
1059	200	0	0	0	0	0	0	0	0
1060	197	3	0	0	0	0	0	0	0
1061	196	3	0	1	0	0	0	0	0
1062	199	1	0	0	0	0	0	0	0
1063	198	1	1	0	0	0	0	0	0
1064	197	3	0	0	0	0	0	0	0
1065	196	4	0	0	0	0	0	0	0
1066	198	2	0	0	0	0	0	0	0
1067	198	1	0	0	0	1	0	0	0
1068	200	0	0	0	0	0	0	0	0
1069	200	0	0	0	0	0	0	0	0
1070	200	0	0	0	0	0	0	0	0
1071	199	1	0	0	0	0	0	0	0
1072	200	0	0	0	0	0	0	0	0
1073	200	0	0	0	0	0	0	0	0
1074	198	2	0	0	0	0	0	0	0
1075	200	0	0	0	0	0	0	0	0
1076	195	5	0	0	0	0	0	0	0

HLS STUDY NO.: 00-4204

APPENDIX B

GASOLINE ETBE VAPOR CONDENSATE:
A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

INDIVIDUAL SPERM MORPHOLOGY DATA

Group IV: 20,000 mg/m^3 (GASOLINE ETBE VAPOR CONDENSATE)

Animal No.	Normal	Head: Amorphous	Head: Small	Head: Enlarged	Head: Double	Tail: Coiled	Tail: Bent	Tail: Double	Other
4051	200	0	0	0	0	0	0	0	0
4052	199	1	0	0	0	0	0	0	0
4053	198	2	0	0	0	0	0	0	0
4054	200	0	0	0	0	0	0	0	0
4055	198	2	0	0	0	0	0	0	0
4056	198	1	0	0	0	1	0	0	0
4057	200	0	0	0	0	0	0	0	0
4058	200	0	0	0	0	0	0	0	0
4059	199	1	0	0	0	0	0	0	0
4060	200	0	0	0	0	0	0	0	0
4061	198	2	0	0	0	0	0	0	0
4062	200	0	0	0	0	0	0	0	0
4063	198	2	0	0	0	0	0	0	0
4064	200	0	0	0	0	0	0	0	0
4065	195	5	0	0	0	0	0	0	0
4066	198	2	0	0	0	0	0	0	0
4067	198	2	0	0	0	0	0	0	0
4068	200	0	0	0	0	0	0	0	0
4069	200	0	0	0	0	0	0	0	0
4070	199	1	0	0	0	0	0	0	0
4071	198	2	0	0	0	0	0	0	0
4072	200	0	0	0	0	0	0	0	0
4073	197	3	0	0	0	0	0	0	0
4074	200	0	0	0	0	0	0	0	0
4075	199	1	0	0	0	0	0	0	0
4076	198	2	0	0	0	0	0	0	0

	Certificates of Analysis	Appendix CC

1. Feed Certificates of Analysis 768
2. Water Certificates of Analysis 794
3. Bedding Certificates of Analysis 801

LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0211749-1
Lot Code: FEB 01 02 1A
Entered: 2/5/2002

Assay	Analysis	Units
PROTEIN	21.2	%
FAT ACID (HYDRO.)	5.62	%
FIBER (CRUDE)	4.29	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.064	PPM
CALCIUM	0.969	%
LEAD	0.173	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.804	%
SELENIUM	0.280	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.04
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

The term "Less Than" is used to signify the lower limit of quantitation of the procedure under the conditions employed.
The use of the term "Less Than" does not imply that traces of analyte were present.

LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0211749-2
Lot Code: FEB 01 02 1B
Entered: 2/5/2002

Assay	Analysis	Units
PROTEIN	21.1	%
FAT ACID (HYDRO.)	5.71	%
FIBER (CRUDE)	4.18	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.062	PPM
CALCIUM	0.998	%
LEAD	0.181	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.801	%
SELENIUM	0.281	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.04
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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The use of the term "Less Than" does not imply that traces of analyte were present.

LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0212257-2
Lot Code: FEB 08 02 1B
Entered: 2/13/2002

Assay	Analysis	Units
PROTEIN	21.4	%
FAT ACID (HYDRO.)	6.02	%
FIBER (CRUDE)	4.37	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.069	PPM
CALCIUM	0.816	%
LEAD	0.192	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.651	%
SELENIUM	0.274	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.07
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

The term "Less Than" is used to signify the lower limit of quantitation of the procedure under the conditions employed.
The use of the term "Less Than" does not imply that traces of analyte were present.

LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0212525-1
Lot Code: FEB 15 02 1A
Entered: 2/19/2002

Assay	Analysis	Units
PROTEIN	21	%
FAT ACID (HYDRO.)	5.62	%
FIBER (CRUDE)	3.92	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.062	PPM
CALCIUM	0.830	%
LEAD	0.177	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.685	%
SELENIUM	0.308	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	LESS THAN 0.02
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15
Aflatoxin	Aflatoxins	LESS THAN 5 PPB	

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0212525-2
Lot Code: FEB 15 02 1B
Entered: 2/19/2002

Assay	Analysis	Units
PROTEIN	21.4	%
FAT ACID (HYDRO.)	5.99	%
FIBER (CRUDE)	4.23	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.067	PPM
CALCIUM	0.722	%
LEAD	0.176	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.655	%
SELENIUM	0.261	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	LESS THAN 0.02
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15
Aflatoxin	Aflatoxins	LESS THAN 5 PPB	

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0213378-1
Lot Code: MAR 04 02 3A
Entered: 3/7/2002

Assay	Analysis	Units
PROTEIN	21.2	%
FAT ACID (HYDRO.)	5.57	%
FIBER (CRUDE)	4.38	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.061	PPM
CALCIUM	0.775	%
LEAD	0.194	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.675	%
SELENIUM	0.215	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.04
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15
Aflatoxin	Aflatoxins	LESS THAN 5 PPB	

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0213378-3
Lot Code: MAR 04 02 3C
Entered: 3/7/2002

Assay	Analysis	Units
PROTEIN	21.2	%
FAT ACID (HYDRO.)	5.74	%
FIBER (CRUDE)	4.47	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.064	PPM
CALCIUM	0.729	%
LEAD	0.186	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.661	%
SELENIUM	0.220	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.05
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0214256-1
Lot Code: MAR 23 02 2A
Entered: 3/26/2002

Assay	Analysis	Units
PROTEIN	21.2	%
FAT ACID (HYDRO.)	6.02	%
FIBER (CRUDE)	4.57	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.068	PPM
CALCIUM	0.871	%
LEAD	0.181	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.698	%
SELENIUM	0.270	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.03
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0214732-1
Lot Code: APR 02 02 1A
Entered: 4/4/2002

Assay	Analysis	Units
PROTEIN	21.2	%
FAT ACID (HYDRO.)	5.37	%
FIBER (CRUDE)	4.58	%
ARSENIC	0.863	PPM
CADMIUM	0.054	PPM
CALCIUM	0.764	%
LEAD	0.196	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.628	%
SELENIUM	0.278	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.04
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0215581-3
Lot Code: APR 18 02 1C
Entered: 4/22/2002

Assay	Analysis	Units
PROTEIN	21	%
FAT ACID (HYDRO.)	5.76	%
FIBER (CRUDE)	4.53	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.053	PPM
CALCIUM	0.850	%
LEAD	0.121	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.600	%
SELENIUM	0.317	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.06
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0216387-2
Lot Code: MAY 03 02 1B
Entered: 5/7/2002

Assay	Analysis	Units
PROTEIN	21.3	%
FAT ACID (HYDRO.)	5.97	%
FIBER (CRUDE)	4.84	%
ARSENIC	LESS THAN 0.2	PPM
CADMIUM	0.063	PPM
CALCIUM	0.789	%
LEAD	0.198	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.563	%
SELENIUM	0.311	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	LESS THAN 0.02
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15
Aflatoxin	Aflatoxins	LESS THAN 5 PPB	

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0216981-2
Lot Code: MAY 15 02 1B
Entered: 5/17/2002

Assay	Analysis	Units
PROTEIN	21.6	%
FAT ACID (HYDRO.)	5.98	%
FIBER (CRUDE)	4.65	%
ARSENIC	<0.200	PPM
CADMIUM	LESS THAN 0.05	PPM
CALCIUM	0.901	%
LEAD	0.186	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.632	%
SELENIUM	0.276	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.11
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15
Aflatoxin	Aflatoxins	LESS THAN 5 PPB	

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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LabDiet PMI NUTRITION INTERNATIONAL

Return to Certified Analysis Retrieval

Product Code: 5002M
Product Desc: CERTIFIED RODENT DIET MEAL
Lab Number: L0216981-3
Lot Code: MAY 15 02 1C
Entered: 5/17/2002

Assay	Analysis	Units
PROTEIN	21.6	%
FAT ACID (HYDRO.)	6	%
FIBER (CRUDE)	4.07	%
ARSENIC	<0.200	PPM
CADMIUM	LESS THAN 0.05	PPM
CALCIUM	0.910	%
LEAD	0.189	PPM
MERCURY	LESS THAN 0.025	PPM
PHOSPHORUS	0.629	%
SELENIUM	0.305	PPM

ORGANOPHOSPHATES	PPM	ORGANOPHOSPHATES	PPM
Diazinon	LESS THAN 0.02	Disulfoton	LESS THAN 0.02
Ethion	LESS THAN 0.02	Malathion	0.09
Methyl Parathion	LESS THAN 0.02	Parathion	LESS THAN 0.02
Thimet	LESS THAN 0.02	Thiodan	LESS THAN 0.02
Trithion	LESS THAN 0.02		

PESTICIDES AND PCB	PPM	PESTICIDES AND PCB	PPM

Aldrin	LESS THAN 0.02	Alpha-BHC	LESS THAN 0.02
Beta-BHC	LESS THAN 0.02	Chlordane	LESS THAN 0.02
DDE	LESS THAN 0.02	DDT	LESS THAN 0.02
Delta-BHC	LESS THAN 0.02	Dieldrin	LESS THAN 0.02
Endrin	LESS THAN 0.02	HCB	LESS THAN 0.02
Heptachlor	LESS THAN 0.02	Heptachlor Epoxide	LESS THAN 0.02
Lindane	LESS THAN 0.02	Methoxychlor	LESS THAN 0.02
Mirex	LESS THAN 0.02	PCB	LESS THAN 0.15

Aflatoxin	Aflatoxins	LESS THAN 5 PPB

No notes.
For additional information, please contact:
1) Customer Service at (314) 982-1310 -- for assay methodology
2) Dr. Dorrance Haught at (314) 768-4362 -- for nutritional interpretation
3) Richmond, IN Manufacturing Plant at (765) 962-9561 -- all other questions

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Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. PW 3466337

Collected:09/25/2000 09:30 by GA

Account Number: 02698

Submitted: 09/25/2000 17:35
Reported: 10/10/00 at 01:32 AM
Discard: 10/18/00
#5 Room 810 INH Grab Water Sample

Huntingdon Life Sciences
PO Box 2360
Mettlers Road
East Millstone NJ 08875-2360

Animal Drinking Water

810IH SDG#: ANI25-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.00092	mg/l	1
	The action level for lead in the lead and copper rule is 0.015 mg/l. Because health effects are possible, especially in young children, EPA guidance recommends that corrective action be taken when the action level is met or exceeded.					
01753	Copper	7440-50-8	0.0034 J	0.0027	mg/l	1
	The action level for copper in the lead and copper rule is 1.3 mg/l. Copper at these levels is not considered a direct health hazard, but can affect the taste of the water. Excessive copper levels may indicate a corrosive water if the system has copper plumbing.					

State of New Jersey Lab Certification No. 77011

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	EPA 200.9	1	10/06/2000 14:48	Erika J. Miller	1
01753	Copper	EPA 200.7	1	10/05/2000 16:51	Jennifer Speck	1
05716	EPA 600 ICP Digest (tot rec)	EPA 200.7	1	10/03/2000 11:00	Christine M. Conlin	1
07803	EPA 600 GFAA Digest-Total Rec.	EPA 200.9	1	10/03/2000 10:30	Liana C. Jones	1

REVIEWED
on 20 Oct00
(faxed results reviewed previously on 10 Oct00)

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. PW 3795210

Collected:03/27/2002 09:20 by GA

Account Number: 02698

Submitted: 03/27/2002 16:28
Reported: 04/11/2002 at 21:09
Discard: 04/26/2002
#7 V-1 Room 708 Grab Water Sample

Huntingdon Life Sciences
PO Box 2360
Mettlers Road
East Millstone NJ 08875-2360

Animal Drinking Water

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01055	Lead (furnace method)	7439-92-1	N.D.	0.00077	mg/l	1
	The action level for lead in the lead and copper rule is 0.015 mg/l. Because health effects are possible, especially in young children, EPA guidance recommends that corrective action be taken when the action level is met or exceeded.					
01753	Copper	7440-50-8	0.108	0.0024	mg/l	1
	The action level for copper in the lead and copper rule is 1.3 mg/l. Copper at these levels is not considered a direct health hazard, but can affect the taste of the water. Excessive copper levels may indicate a corrosive water if the system has copper plumbing.					
00307	Heterotrophic Plate Count	n.a.	N.D.	1.	cfu/ml	n.a.
	This result is an estimated count. All plates used to calculate the result are outside the established counting range of 30 to 300 colony forming units (cfu) per dilution.					
00564	Pseudomonas aeruginosa	n.a.	See Below		See Below	n.a.
	A 100g sample was analyzed for Pseudomonas aeruginosa. The result was Negative.					
06477	Total Coliform	n.a.	See Below	1.	/100ml	n.a.
	Total Coliform	Negative	/100ml			
	E. coli	Negative	/100ml			
	The water this test result represents is considered BACTERIOLOGICALLY SAFE for drinking according to standards established by the Environmental Protection Agency (EPA). If the source of your water supply is a well, we recommend that you retest your well water every 6 to 12 months to verify that it continues to be bacteriologically safe.					

State of New Jersey Lab Certification No. PA011

REVIEWED
TM 19 Apr 02

Laboratory Chronicle

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. PW 3795210

Collected:03/27/2002 09:20 by GA

Account Number: 02698

Submitted: 03/27/2002 16:28
Reported: 04/11/2002 at 21:09
Discard: 04/26/2002
#7 V-1 Room 708 Grab Water Sample

Huntingdon Life Sciences
PO Box 2360
Mettlers Road
East Millstone NJ 08875-2360

Animal Drinking Water

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01055	Lead (furnace method)	EPA 200.9	1	04/03/2002 10:47	Jessica L Boyd	1
01753	Copper	EPA 200.7	1	04/07/2002 16:18	Julie A Slaughenhoupt	1
00307	Heterotrophic Plate Count	Standard Methods, 19th ed 1995	1	03/27/2002 19:15	Earl R Custer	n.a.
00564	Pseudomonas aeruginosa	Reference: USP, 23 rd Ed 1995	1	03/27/2002 19:15	Earl R Custer	n.a.
06477	Total Coliform	Standard Methods 19th ed, 1995	1	03/27/2002 17:35	Constance D Rhodes	n.a.
05281	Undigested Sample Prep	EPA 200.9	1	03/29/2002 10:10	Denise K Conners	1

REVIEWED
M 19 Apr 02

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Elizabethtown Water Company
Physical & Chemical Analyses

Date April 8, 2002

General Source Raritan-Millstone Plant

Sample No. 1 Plant Delivered Water - 7:30 a.m. 4-9-02, DD

Sample No. 2

Sample No. 3

Sample No. 4

Sample No. 5

Sample No. 6

Sample No. 7

Sample No. 8

Parameter	MCL (mg/l)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
Temperature ° F	-	52							
Turbidity (NTU)	0.5 NTU	0.17							
Color	10 *	2							
Threshold Odor 40 ° C	3 TON *	3.6/1Cc							
Threshold Taste	3 TTN *	3.4							
Conductivity (micromhos / cm)	-	369							
Hardness, Total (as mg / l CaCO3)	250 mg / l *	118							
Alkalinity	-	53							
pH	6.5-8.5 *	7.2							
Chlorine, Free / Total (mg / l Cl)	-	<0.05/1.34							
Calcium (as mg / l CaCO3)	-	80							
Magnesium (as mg / l CaCO3)	-	38							
Iron, Total (mg / l Fe)	0.3 mg/ l *	<0.05							
Sulfates (mg / l SO4)	250 mg/ l *	63.1							
Chlorides (mg / l Cl)	250 mg/ l *	47.6							
Fluoride (mg / l F)	1.2 mg / l	<0.01							
Total Dissolved Solids (mg / l)	500 mg / l *	330							
Total Suspended Solids (mg / l)	-	0.33							
Ammonia Nitrogen (mg / l N)	-	0.06							
Nitrate Nitrogen (mg / l N)	10 mg / l	1.5							
Dissolved Oxygen (mg / l O2)	-	10.5							
BOD 5 (mg / l O2)	-	-							
Langelier Index	+/- 1.0	-							
Surfactants (mg / l LAS)	0.5 mg / l *	-							
Hydrogen Sulfide (mg / l H2S as S)	-	0							
Nitrite Nitrogen (mg / l N)	-	<0.010							
Phosphate (mg / l PO3)	-	<0.05							
Manganese (mg / l MN)	-	<0.05							
T.O.C. (mg / l)	-	1.9							

REVIEWED

* Secondary or Recommended MCL

Laboratory Analyst: KK

Revised 08/05/98

Elizabethtown Water Company
Physical & Chemical Analyses

Date May 14, 2002

General Source Raritan-Millstone Plant

Sample No. 1 Plant Delivered Water - 7:30 a.m. 5-14-02, DD

Sample No. 2

Sample No. 3

Sample No. 4

Sample No. 5

Sample No. 6

Sample No. 7

Sample No. 8

Parameter	MCL (mg/l)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
Temperature ° F	-	60							
Turbidity (NTU)	0.5 NTU	0.16							
Color	10 *	1							
Threshold Odor 40 ° C (1)	3 TON *	3.4/1Cc							
Threshold Taste	3 TTN *	3.4							
Conductivity (micromhos / cm)	-	257							
Hardness, Total (as mg / l CaCO3)	250 mg / l *	76							
Alkalinity	-	33							
pH	6.5-8.5 *	6.8							
Chlorine, Free / Total (mg / l Cl)	-	<0.05/1.19							
Calcium (as mg / l CaCO3)	-	50							
Magnesium (as mg / l CaCO3)	-	26							
Iron, Total (mg / l Fe)	0.3 mg/ l *	<0.05							
Sulfates (mg / l SO4)	250 mg/ l *	53.1							
Chlorides (mg / l Cl)	250 mg/ l *	23.8							
Fluoride (mg / l F)	1.2 mg / l	<0.1							
Total Dissolved Solids (mg / l)	500 mg / l *	200							
Total Suspended Solids (mg / l)	-	0.31							
Ammonia Nitrogen (mg / l N)	-	<0.05							
Nitrate Nitrogen (mg / l N)	10 mg / l	1.0							
Dissolved Oxygen (mg / l O2)	-	9.0							
BOD 5 (mg / l O2)	-	-							
Langelier Index	+/- 1.0	-							
Surfactants (mg / l LAS)	0.5 mg / l *	<0.05							
Hydrogen Sulfide (mg / l H2S as S)	-	0							
Nitrite Nitrogen (mg / l N)	-	<0.010							
Phosphate (mg / l PO3)	-	0.18							
Manganese (mg / l MN)	-	<0.05							
T.O.C. (mg / l)	-	2.3							

REVIEWED
M 21 Jones

* Secondary or Recommended MCL

(1) Taste and odor are not required analyses by Elizabethtown

Laboratory Analyst: KK

M 21 Jones

Revised 08/05/98

Elizabethtown Water Company
Physical & Chemical Analyses

Date June 4, 2002

General Source Raritan-Millstone Plant
Sample No. 1 Plant Delivered Water - 7:30 a.m. 6-4-02, DD
Sample No. 2
Sample No. 3
Sample No. 4
Sample No. 5
Sample No. 6
Sample No. 7
Sample No. 8

Parameter	MCL (mg/l)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
Temperature ° F	-	73							
Turbidity (NTU)	0.5 NTU	0.20							
Color	10 *	1							
Threshold Odor 40 ° C (1)	3 TON *	3.1/1Cc							
Threshold Taste	3 TTN *	2.9							
Conductivity (micromhos / cm)	-	360							
Hardness, Total (as mg / l CaCO3)	250 mg / l *	114							
Alkalinity	-	53							
pH	6.5-8.5 *	6.7							
Chlorine, Free / Total (mg / l Cl)	-	<0.05/1.02							
Calcium (as mg / l CaCO3)	-	76							
Magnesium (as mg / l CaCO3)	-	38							
Iron, Total (mg / l Fe)	0.3 mg/ l *	<0.05							
Sulfates (mg / l SO4)	250 mg/ l *	62.5							
Chlorides (mg / l Cl)	250 mg/ l *	43.6							
Fluoride (mg / l F)	1.2 mg / l	0.20							
Total Dissolved Solids (mg / l)	500 mg / l *	0.62							
Total Suspended Solids (mg / l)	-	348							
Ammonia Nitrogen (mg / l N)	-	<0.05							
Nitrate Nitrogen (mg / l N)	10 mg / l	0.9							
Dissolved Oxygen (mg / l O2)	-	8.3							
BOD 5 (mg / l O2)	-	-							
Langelier Index	+/- 1.0	-							
Surfactants (mg / l LAS)	0.5 mg / l *	-							
Hydrogen Sulfide (mg / l H2S as S)	-	0							
Nitrite Nitrogen (mg / l N)	-	<0.010							
Phosphate (mg / l PO3)	-	0.15							
Manganese (mg / l MN)	-	<0.05							
T.O.C. (mg / l)	-	2.3							

* Secondary or Recommended MCL

Laboratory Analyst: KK

REVIEWED
21 June

Revised 08/05/98

(1) Odor is not a required analysis for Elizabethtown
21 June

Elizabethtown Water Company
Physical & Chemical Analyses

Date July 9, 2002

General Source Raritan-Millstone Plant
Sample No. 1 Plant Delivered Water - 7:45 a.m. 7-9-02, Tom
Sample No. 2
Sample No. 3
Sample No. 4
Sample No. 5
Sample No. 6
Sample No. 7
Sample No. 8

Parameter	MCL (mg/l)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
Temperature ° F	-	79							
Turbidity (NTU)	0.5 NTU	0.17							
Color	10 *	1							
Threshold Odor 40 ° C (1)	3 TON *	3.4/2Cc							
Threshold Taste	3 TTN *	3.1							
Conductivity (micromhos / cm)	-	315							
Hardness, Total (as mg / l CaCO3)	250 mg / l *	100							
Alkalinity	-	48							
pH	6.5-8.5 *	7.2							
Chlorine, Free / Total (mg / l Cl)	-	<0.05/1.30							
Calcium (as mg / l CaCO3)	-	70							
Magnesium (as mg / l CaCO3)	-	30							
Iron, Total (mg / l Fe)	0.3 mg/ l *	<0.05							
Sulfates (mg / l SO4)	250 mg/ l *	44.3							
Chlorides (mg / l Cl)	250 mg/ l *	25.7							
Fluoride (mg / l F)	1.2 mg / l	<0.1							
Total Dissolved Solids (mg / l)	500 mg / l *	228							
Total Suspended Solids (mg / l)	-	1.14							
Ammonia Nitrogen (mg / l N)	-	<0.05							
Nitrate Nitrogen (mg / l N)	10 mg / l	0.77							
Dissolved Oxygen (mg / l O2)	-	7.7							
BOD 5 (mg / l O2)	-	-							
Langelier Index	+/- 1.0	-							
Surfactants (mg / l LAS)	0.5 mg / l *	<0.05							
Hydrogen Sulfide (mg / l H2S as S)	-	0							
Nitrite Nitrogen (mg / l N)	-	<0.010							
Phosphate (mg / l PO3)	-	0.12							
Manganese (mg / l MN)	-	<0.05							
Total (mg / l)	-	1.5							

REVIEWED

* Secondary or Recommended MCL

(1) odor and taste are not required analyses TM 25 July 02

Laboratory Analyst: MT

Revised 08/05/98

SILLIKER
Assuring Quality Worldwide

SILLIKER LABORATORIES OF OHIO
1224 KINNEAR ROAD, SUITE 114 • COLUMBUS, OH 43212
TEL: 614/ 486 0150 • FAX: 614/ 486 0151

LABORATORY REPORT

REPORT NO.	DATE	PAGE
196389	12/01/99	1

PURCHASE ORDER:
LOT# DK139 & DK219

MR. TED A. WEAVER
SALES MANAGER
THE ANDERSON'S, INC.
480 W. DUSSEL DR.
P.O. BOX 119
MAUMEE OH 43537

SAMPLES RECEIVED: 11/10/99
RECEIVED FROM: MAUMEE OH

REVISED DATE: 12/06/99
REISSUED DATE: 1/05/00

ANALYTICAL RESULTS

SAMPLE DESCRIPTION

BED O' COBBS
1/8" & 1/4"
COMPOSITE SAMPLE
DK 139 AND DK219

ORGANOPHOSPHATE/ORGANONITROGEN SCREEN

PESTICIDE	AMOUNT (PPM)	MDL (PPM)	TOLERANCE (PPM)
ACEPHATE	ND	0.05	
AMETRYN	ND	0.05	
ATRAZINE	ND	0.05	
AZINPHOS-METHYL (GUTHION)	ND	0.05	
BENTHIOCARB	ND	0.1	
BOLSTAR (SULPROFOS)	ND	0.05	
CARBOPHENOTHION (TRITHION)	ND	0.05	
CHLORFENVINPHOS (SUPONA)	ND	0.05	
CHLOROPROPHAM	ND	0.05	
CHLORPYRIFOS (DURSBAN)	ND	0.03	
CHLORPYRIFOS-METHYL	ND	0.05	
CIODRIN (CROTOPHOS)	ND	0.05	
COUMAPHOS (CO-RAL)	ND	0.04	
CYANAZINE (BLADEX)	ND	0.05	
DEF	ND	0.05	
DEMETON (SYSTOX) O/S ANALOGUES	ND	0.05	
DIAZINON	ND	0.03	
DIBROM (NALED)	ND	0.05	
DICROTOPHOS (DIDRIN)	ND	0.05	
DIMETHOATE (CYGON)	ND	0.03	
DIOXATHION (DELNAV)	ND	0.05	
DIPHENYL AMINE	ND	0.1	
DISULFOTON (DISYSTON)	ND	0.05	
EPN	ND	0.05	
ETHION	ND	0.05	
ETHOPROP (MOCAP)	ND	0.05	
FENAMIPHOS (NEMACUR)	ND	0.05	
FENITROTHION (SUMITHION)	ND	0.05	
FENITHION (BAYTEX)	ND	0.05	
FONOFOS (DYFONATE)	ND	0.05	
HEXAZINONE (VELPAR)	ND	0.05	

The results of this report relate only to the samples tested. This report shall not be reproduced unless written approval has been obtained from the laboratory.

* CONTINUED *

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LABORATORY REPORT

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PURCHASE ORDER

LOT# DK139 & DK219

CONTINUED:

ANALYTICAL RESULTS

SAMPLE DESCRIPTION			
BED O' COBBS 1/8" & 1/4" COMPOSITE SAMPLE DK 139 AND DK219	HOSTATHION (TRIAZOPHOS)	ND	0.05
	IMAZALIL	ND	0.05
	IMIDAN (PHOSMET)	ND	0.05
	ISOFENPHOS (OFTANOL)	ND	0.05
	MALATHION	ND	0.05
	METALAXYL	ND	0.05
	METAHAMIDOPHOS	ND	0.05
	METHIDATHION (SUPRACIDE)	ND	0.05
	METHYL PARATHION	ND	0.05
	METOLACHLOR (DUAL)	ND	0.05
	METRIBUZIN (SENCOR)	ND	0.05
	MEVINPHOS (PHOSDRIN)	ND	0.05
	MOLINATE (ORDRAM)	ND	0.05
	MYCLOBUTANIL	ND	0.05
	PARATHION	ND	0.04
	PHORATE (THIMET)	ND	0.05
	PHOSALONE (ZOLONE)	ND	0.05
	PHOSPHAMIDON (DIMECRON)	ND	0.05
	PRIMIPHOS-METHYL	ND	0.05
	PROFENOPHOS (CRUACRON)	ND	0.05
	PROMETRYNE	ND	0.05
	PROPETAMPHOS (SAFROTIN)	ND	0.05
	RONNEL (FENCHLORFOS)	ND	0.05
	SIMAZINE	ND	0.05
	TERBACIL	ND	0.5
	TETRACHLORVINPHOS (GARDONA)	ND	0.05
	THIABENDAZOLE	ND	0.05
	THIONAZIN (ZINOPHOS)	ND	0.05

ND=NONE DETECTED

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LABORATORY REPORT

REPORT NO.	DATE	PAGE
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PURCHASE ORDER:
LOT# DK139 & DK219

MR. TED A. WEAVER
SALES MANAGER
THE ANDERSON'S, INC.
480 W. DUSSEL DR.
P.O. BOX 119
MAUMEE OH 43537

SAMPLES RECEIVED: 11/10/99
RECEIVED FROM: MAUMEE OH

REVISED DATE: 12/06/99
REISSUED DATE: 1/05/.

ANALYTICAL RESULTS

SAMPLE DESCRIPTION

BED O' COBBS
1/8" & 1/4"
COMPOSITE SAMPLE
DK 139 AND DK219

ORGANOCHLORINE PESTICIDE SCREEN

PESTICIDE	AMOUNT (PPM)	MDL (PPM)	TOLERANCE (PPM)
A,B,D-BHC	ND	0.05	
ACETOCLOR	ND	0.02	
ALACHLOR (LASSO)	ND	0.02	
ALERT (PIRATE)	ND	0.04	
ALDRIN	ND	0.01	
BANFLURALIN (BALAN, BENEFIN)	ND	0.05	
BHC (BENZAHEX)	ND	0.02	
BIFENOX (MODOWN)	ND	0.05	
BIFENTHRIN	ND	0.04	
BROMACIL	ND	0.1	
CAPTAFOL	ND	0.04	
CAPTAN	ND	0.05	
CHLORDANE	ND	0.25	
CHLOROBENZILATE (ACRABEN)	ND	0.4	
CHLORTHALONIL (BRAVO)	ND	0.01	
CYANAZINE	ND	0.1	
CYFLUTHRIN	ND	0.15	
CYPERMETHRIN	ND	0.05	
DACTHAL (CHLORTHAL)	ND	0.03	
DDD	ND	0.03	
DDE	ND	0.05	
DDT	ND	0.05	
DICHLOBENIL (CASORON)	ND	0.03	
DICHLONE	ND	0.05	
DICLORAN (BOTRAN)	ND	0.02	
DICOFOL (KELTHANE)	ND	0.05	
DIELDRIN	ND	0.01	
DYRENE (ANILAZINE)	ND	0.1	
ENDOSULFAN ALPHA	ND	0.01	
ENDOSULFAN BETA	ND	0.01	
ENDOSULFAN SULFATE	ND	0.01	
ENDRIN	ND	0.01	

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LABORATORY REPORT

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PURCHASE ORDER:
LOT# DK139 & DK219

CONTINUED:

ANALYTICAL RESULTS

SAMPLE DESCRIPTION

BED O' COBBS
1/8" & 1/4"
COMPOSITE SAMPLE
DK 139 AND DK219

ESFENVALERATE (ASANA)	ND	0.02
ETHALFLURALIN (SONALAN)	ND	0.03
FLUVALINATE	ND	0.4
FOLPET	ND	0.05
HEPTACHLOR	ND	0.01
HEPTACHLOR EPOXIDE	ND	0.02
IPRODIONE (ROVRAL)	ND	0.05
LINDANE (GAMMA-BHC)	ND	0.02
LINURON	ND	0.05
METHOXYCHLOR	ND	0.05
METRIBUZIN	ND	0.02
MIREX	ND	0.02
MYCLOBUTANIL (RALLY)	ND	0.05
NITROFEN (TOK)	ND	0.05
OXADIAZON (RONSTAR)	ND	0.05
OXYFLUORFEN (GOAL)	ND	0.04
PENDAMETHALIN	ND	0.02
PENTACHLORONITROBENZENE (PCNB)	ND	0.02
PERMETHRIN	ND	0.05
PERTHANE (ETHYLAN)	ND	0.05
POLYCHLORINATED BIPHENYLS	ND	0.25
PROCYMIDONE	ND	0.05
PROFLURALIN (TOLBAN)	ND	0.03
PRONAMIDE (KERB, PROPYZAMIDE)	ND	0.2
PYRETHRINS (TOTAL)	ND	0.1
TETRADIFON (TEDION)	ND	0.05
TOXAPHENE (ATTAC) STROBANE	ND	0.25
TRIDIMEFON (BAYLETON)	ND	0.05
TRIFLURALIN (TREFLAN)	ND	0.02
VEGADEX (DIETHYLDITHIOCARB. ACID)	ND	0.05
VINCLOZOLIN (RONILAN)	ND	0.02

MICHELE SMOOT, PH.D.
LABORATORY DIRECTOR

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LABORATORY REPORT

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PURCHASE ORDER

LOT# DK139 & DK219

MR. TED A. WEAVER
SALES MANAGER
THE ANDERSON'S, INC.
480 W. DUSSEL DR.
P.O. BOX 119
MAUMEE OH 43537

SAMPLES RECEIVED: 11/10/99
RECEIVED FROM: MAUMEE OH

REVISED DATE: 12/06/99
REISSUED DATE: 1/05/00

ANALYTICAL RESULTS

SAMPLE DESCRIPTION	SALMONELLA EIA METHOD SAMPLE WEIGHT	RESULT	COLIFORMS MPN/G	YEASTS/G	MOLDS/G	SHIGELLA SAMPLE WEIGHT	RESULT
BED O' COBBS 1/8" & 1/4" COMPOSITE SAMPLE DK 139 AND DK219	25G	NEGATIVE	<3	<10	<10	25G	NEGATIVE

SAMPLE DESCRIPTION	PREP METHOD	CADMIUM	LEAD	ARSENIC
BED O' COBBS 1/8" & 1/4" COMPOSITE SAMPLE DK 139 AND DK219	MICROWAVE WET ASH	<0.05 MG/100G	<0.1 MG/100G	<0.1MG/100G

SAMPLE DESCRIPTION	FUMONISIN (PPB)	VOMITOXIN	MERCURY (HYDRIDE GENERATOR)
BED O' COBBS 1/8" & 1/4" COMPOSITE SAMPLE DK 139 AND DK219	LIMITS 0.1PPM B1 0.1 B2,B3 ND*	LIMITS 0.1 PPM 0.2 DETECTED	<0.01 PPM

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LABORATORY REPORT

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PURCHASE ORDER		
LOT#		

MR. TED A. WEAVER
SALES MANAGER
THE ANDERSON'S, INC.
480 W. DUSSEL DR.
P.O. BOX 119
MAUMEE OH 43537

SAMPLES RECEIVED: 12/08/99
RECEIVED FROM: MAUMEE OH

REISSUED DATE: 1/05/00

ANALYTICAL RESULTS

SAMPLE DESCRIPTION	AEROBIC PLATE COUNT/G
BED O COBS DK 139	<10
BED O COBS DK 219	<10

MICHELE SMOOT, PH.D.
LABORATORY DIRECTOR

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SILLIKER
Assuring Quality Worldwide

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LABORATORY REPORT

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PURCHASE ORDER

LOT# DK139 & DK219

MR. TED A. WEAVER
SALES MANAGER
THE ANDERSON'S, INC.
480 W. DUSSEL DR.
P.O. BOX 119
MAUMEE OH 43537

SAMPLES RECEIVED: 11/10/99
RECEIVED FROM: MAUMEE OH

REVISED DATE: 12/06/99
REISSUED DATE: 1/05/00

ANALYTICAL RESULTS

SAMPLE DESCRIPTION

BED O' COBBS
1/8" & 1/4"
COMPOSITE SAMPLE
DK 139 AND DK219

AFLATOXIN
(PPB)

	TEST LIMIT	RESULT
B1	1 PPB	ND
B2	1 PPB	ND
G1	1 PPB	ND
G2	1 PPB	ND

ND=NONE DETECTED

MICHELE SMOOT, PH.D.
LABORATORY DIRECTOR

Results of this report relate only to the samples tested. This report shall be reproduced unless written approval has been obtained from the laboratory.

	Protocol and Protocol Amendments	Appendix DD

PROTOCOL

GASOLINE ETBE VAPOR CONDENSATE

A ONE-GENERATION WHOLE-BODY INHALATION REPRODUCTION TOXICITY STUDY IN RATS

HLS Study No.: 00-4204
Sponsor Study No.: 211-ETBE-1G
Final Protocol
Date: 28 January 2002

PROTOCOL SIGNATURES / PREFACE

Study Title: Gasoline ETBE Vapor Condensate: A One-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats

HLS Study No.: 00-4204
Sponsor Study No.: 211-ETBE-1G

This is the Final Protocol. It has been reviewed and approved by:

5 March 02
Date

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

04 March, 2002
Date

Thomas M. Gray, M.S., D.A.B.T.
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Washington, D.C. 20005-4070
Phone No.: 202-682-8480
Fax No.: 202-682-8270
Email: grayt@api.com

STUDY SPECIFIC INFORMATION

Ship Unused Test Substance and Empty Test Substance Containers to:	Name:	Michael C. Henley
	Sponsor	Chevron Research and Technology Company
	Address:	100 Chevron Way Richmond, CA 94802-0627
	Phone No.:	510-242-3062
	Fax No.:	510-242-5542
	Email	Mche@chevron.com

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1. INTRODUCTION

HLS Study No.	00-4204
Sponsor Study No.	211-ETBE-1G
Study Title	Gasoline ETBE Vapor Condensate: A One-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats
Testing Facility	Huntingdon Life Sciences Mettlers Road PO Box 2360 East Millstone, NJ 08875
Purpose	The objective of this reproduction study is to provide general information concerning the effects of a test substance on the integrity and performance of the male and female reproductive systems, including gonadal function, the estrous cycle, mating behavior, conception, gestation, parturition and lactation. The study will also provide information about the effects of the test substance on neonatal morbidity and mortality, and data on prenatal and postnatal developmental toxicity.

2. STUDY PERSONNEL

Study Director:	Gary M. Hoffman, B.A., D.A.B.T. Tel.: 732-873-2550 x2920 Fax: 732-873-3992 Email: hoffmang@Princeton.Huntingdon.com
Alternate:	Carol S. Auletta, M.B.A., D.A.B.T. x2960 Senior Director of Toxicology

Additional personnel will be documented in the project file and presented in the final report.

3. REGULATORY REFERENCES

3.1. TEST GUIDELINE

This study is designed to meet or exceed the pertinent requirements of:

US EPA Vehicle Emissions Inhalation Exposure Guideline 79.61, CFR Vol. 59, No. 122, 27 June 1994.

US EPA (Environmental Protection Agency) Health Effects Test Guidelines, OPPTS 870.3800, Reproduction and Fertility Effects (August 1998) except this study will only continue through the 1st generation of offspring.

3.2. GOOD LABORATORY PRACTICES

This study will be conducted in accordance with US EPA 79.60, CFR Vol. 59, No. 122, 27 June 1994. This study will be performed according to protocol and Huntingdon Life Sciences' Standard Operating Procedures.

3.3. FACILITIES MANAGEMENT/ANIMAL HUSBANDRY

Currently acceptable practices of good animal husbandry will be followed, e.g., *Guide for the Care and Use of Laboratory Animals*; National Academy Press, 1996. Huntingdon Life Sciences Inc., is fully accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC).

3.4. ANIMAL WELFARE ACT COMPLIANCE

This study will comply with all appropriate parts of the Animal Welfare Act regulations: 9 CFR Parts 1 and 2 Final Rules, Federal Register, Volume 54, No. 168, August 31, 1989, pp. 36112-36163 effective October 30, 1989 and 9 CFR Part 3 Animal Welfare Standards; Final Rule, Federal Register, Volume 56, No. 32, February 15, 1991, pp. 6426-6505 effective March 18, 1991. The Sponsor should make particular note of the following:

1. The Sponsor's signature on all protocol documents for the study described herein signifies that there are no generally accepted non-animal alternatives and the study does not unnecessarily duplicate previous experiments.

2. All procedures used in this study have been designed to avoid discomfort, distress and pain to the animals. All methods are described in this study protocol or in written laboratory standard operating procedures.

3. Any procedures outlined in this study protocol which are expected to cause more than momentary or slight pain or distress to the animals will be performed with appropriate sedatives, analgesics or anesthetics unless the withholding of these agents is justified for scientific reasons, in writing, by the Sponsor and the Study Director and approved by the IACUC; in which case the procedure will continue for the minimum time necessary. Documentation of the justification for withholding treatment for pain or distress and IACUC approval of the procedures will be made prior to study initiation on the IACUC Protocol Review form.

4. Animals experiencing more than momentary or slight pain or distress due to emergency situations such as injury or illness will be treated by the Testing Facility's veterinarian staff with approved analgesics or agents to relieve pain. If possible, the Study Director will be consulted prior to treatment; however, the veterinary staff is authorized to administer emergency treatment as necessary. Any subsequent treatment or euthanasia will be administered after consultation with the Study Director. The Sponsor will be advised by the Study Director of all emergency situations in as timely a manner as possible.

5. Methods of euthanasia used during this study are in conformance with the above referenced regulations.

6. The numbers of animals used in this study was selected to ensure that an adequate number of pregnant females are available for valid statistical interpretation of the data as required by the referenced guidelines. OPPTS 870.3800 Guidelines, Section 2, number (B), item (v) states: Each control group should contain a sufficient number of mating pairs to yield at least 20 pregnant females. Each test group should contain a similar number of mating pairs. The 26 females/group will assure us of having at least 20 pregnant females/group based on 80% - 100% pregnancy rate at HLS.

3.5. INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE:

The IACUC Protocol Review Subcommittee has reviewed this protocol and found it to be in compliance with all appropriate regulations.

4. QUALITY ASSURANCE MONITORING

The Huntingdon Life Sciences Quality Assurance Unit, East Millstone, NJ will monitor the facilities, equipment, personnel, methods, practices, records and controls used in this study to assure that they are in conformance with this protocol, company standard operating procedures, and the appropriate Good Laboratory Practice regulations.

5. ALTERATION OF DESIGN

Alterations of this protocol may be made as the study progresses. No changes in the protocol will be made without the consent of the Sponsor. In the event that the Sponsor authorizes a protocol change verbally, such changes will be honored by the Testing Facility and will be followed by a written verification. All protocol modifications will be signed by the Study Director and a Sponsor representative. Any modifications potentially affecting animal welfare will also be signed by two members of the Institutional Animal Care and Use Committee prior to the modification's implementation.

6. PROPOSED STUDY DATES

Study initiation date:	Date Study Director signs protocol
Receipt of test animals:	5 March 2002
Initiation of exposures: (Experimental start date)	19 March 2002
Termination of exposures:	28 July 2002
Submission of audited draft report:	27 November 2002
Experimental termination:	Date of last data collection (Date final report is signed by Pathologist)
Study completion date:	Date final report is signed by Study Director

7. EXPERIMENTAL DESIGN

			Number of Animals				
			Mated Adults		Microscopic Pathology Adult Generations[b]		Macroscopic Postmortem Examinations-Pups
			P_0		P_0		
Group	Group Designation	Exposure Levels (mg/m^3) [a]	M	F	M	F	F_1
I	Control	0 (air only)	26	26	10	10	3/sex/litter
II	Low	2,000	26	26	TBD	TBD	3/sex/litter
III	Middle	10,000	26	26	TBD	TBD	3/sex/litter
IV	High	20,000	26	26	10	10	3/sex/litter

[a] Exposures daily (7 days/week) for 6 hours per day.

[b] Histologic examinations will be performed on reproductive tissues for the control and high-exposure animals.

M = Male; F = Female; TBD = to be determined based on Group IV evaluations; The first day of exposure will be Day 0.

8. TEST SUBSTANCE

8.1. TEST SUBSTANCE: Gasoline ETBE Vapor Condensate

Description, lot number, storage, expiration date (if available) and handling procedures, as well as other pertinent information will be documented in the study data.

8.2. IDENTIFICATION OF TEST SUBSTANCE

Unless otherwise noted, the identity, strength, composition, stability and method of synthesis, fabrication and/or derivation of each batch of the test substance will be documented by the Sponsor before its use in the study. This documentation will be maintained by the Sponsor at the address indicated on page 2 of this protocol. The Sponsor will conduct a purity analysis of the test substance by GC prior to the start of this study.

8.3. ARCHIVAL SAMPLES

An archival sample from each lot of test substance will be taken and stored in the Archives of the Testing Facility. If multiple studies are conducted with the same substance, a common archival sample may be taken and appropriately labeled.

8.4. UNUSED TEST SUBSTANCE

The unused portion of the test substance as well as any empty test substance containers will be returned to the Sponsor's designee (see page 2) following completion of the study. Empty test substance containers will be returned to the Sponsor's designee on an as needed basis. The Sponsor will be responsible for tracking their disposition.

In the event the Sponsor wishes the Testing Facility to arrange for disposal, a cost for this service will be provided.

9. TEST ANIMALS (P_0)

Albino Rats (Outbred) VAF/Plus®

9.1. SPECIES

Sprague Dawley–derived CD®
[Crl: CD® IGS BR]

9.2. SUPPLIER

Charles River Laboratories
Kingston, New York

9.3. JUSTIFICATION FOR TEST SYSTEM SELECTION

The rat is used as a surrogate to humans in the detection of reproductive effects and is a species in which known reproductive toxicants have been detected. The rat is a rodent animal model commonly utilized in reproduction studies and is recommended in the referenced guidelines. In addition, a historical control database with this strain of animal and supplier facility is available for comparative evaluation.

9.4. ANIMAL REQUIREMENTS/SPECIFICATIONS

9.4.1. NUMBER

	Total	Males	Females
Placed on test	208	104	104

9.4.2. AGE AND WEIGHT

Males and Females: Approximately four weeks at receipt; and five to six weeks at initiation of treatment. Males will weigh approximately 150-200 grams and females 125-175 grams at initiation of exposures. Animals outside this weight range will be used at the discretion of the Study Director.

Females: Nulliparous and non-pregnant

9.5. ACCLIMATION PERIOD

Approximately two weeks; all animals will be checked for viability twice daily. Prior to assignment to study all animals will be examined to ascertain suitability for study.

9.6. ANIMAL HUSBANDRY

9.6.1. HOUSING

Animals will be housed in suspended, stainless steel cages with wire mesh fronts and floors. Animals at receipt will be housed 2/cage during the initial week of acclimation. Thereafter, animals will be housed individually except as follows:

Mating: One male and one female co-housed continuously (except during treatment) until mated or 14 days have elapsed, whichever occurs first. Mating pairs will be assigned randomly.

Lactation: Dam with litter (solid plastic "shoebox" cage)

9.6.2. FEED & FEED ANALYSIS

Certified Rodent Diet, No. 5002; (Meal) (PMI Nutrition International, St. Louis, MO) ad libitum except during exposures.

Analytical certifications of batches of feed used during the study are provided by the manufacturer and will be maintained on file at the Testing Facility. There are no known contaminants in the feed that are expected to interfere with the results of this study.

9.6.3. WATER & WATER ANALYSIS

Facility water supply (Elizabethtown Water Company, Westfield, NJ); without restriction except during exposures, via an automated water delivery system to individual animal cages.

Water analyses are conducted by Elizabethtown Water company to ensure that water meets standards specified under the EPA Federal Safe Drinking Water Act Regulations (40 CFR part 141). Water analyses, provided by the supplier, will be maintained on file at the Testing Facility. In addition, water samples are collected biannually from representative rooms in the Testing Facility; chemical and microbiological water analyses are conducted on these samples by a subcontract laboratory. Results are maintained on file at the Testing Facility. There are no known contaminants in the water that are expected to interfere with the results of this study.

9.6.4. BEDDING SUBSTANCE

Ground corncob bedding (Bed-O'-Cobs® 1/4 inch irradiated, The Andersons, Maunee, OH) will be provided for each mated female on Day 18 of gestation. Fresh bedding will be provided at least weekly and as needed during the lactation period (litters will be weaned on Day 28 of lactation).

9.6.5. BEDDING ANALYSIS

Analyses for each batch of bedding used on study provided by the supplier, will be maintained on file at the Testing Facility. There are no known

contaminants in the bedding that are expected to interfere with the results of this study.

9.6.6. VETERINARY CARE

Animals are monitored by the technical staff for any conditions requiring possible veterinary care. If any such conditions are identified, a staff veterinarian will be notified for an examination and evaluation. Animals will be treated as outlined in the Animal Welfare Act Compliance section of this protocol.

9.6.7. ENVIRONMENTAL CONDITIONS

Light/Dark Cycle

Twelve-hour light/dark cycle daily via automatic timer.

Temperature

Temperature will be monitored in accordance with Testing Facility SOPs to ensure that the desired range of 19-25°C is maintained to the maximum extent possible.

Humidity

Humidity will be monitored in accordance with Testing Facility SOPs to ensure that the desired range of 30-70% is maintained to the maximum extent possible.

Air Changes

Air changes will be maintained at a rate of 10-15 per hour and will be recorded once prior to exposures.

9.7. ANIMAL HUSBANDRY DURING EXPOSURE

9.7.1. HOUSING **Individual in suspended, stainless steel wire mesh cages.**

9.7.2. FEED **None.**

9.7.3. WATER **None.**

9.8. SELECTION FOR STUDY

More animals than required for the study will be purchased and acclimated. Animals considered suitable for study on the basis of pretest physical examinations, body weight data and any other pretest evaluations will be randomly assigned, by sex, to control or treated groups in an attempt to equalize mean group body weights. Individual weights of animals placed on test shall not exceed 20% of the mean weight for each sex. Disposition of all animals not used in the study will be maintained in the study file.

9.9. ANIMAL IDENTIFICATION

Each animal will be assigned a temporary identification number upon receipt. After selection for study (P generation), each animal will be ear-tagged with a number assigned by the Testing Facility. This number plus the study number will comprise the unique identification for each study animal. If the tag is lost, it will be replaced or the animal will be tail tattooed for identification. Each animal's cage will be provided with a card that will be color-coded for exposure level identification and will contain the study number and animal number.

10. MATING, GESTATION AND LACTATION PROCEDURES

10.1. ESTROUS CYCLING:

Daily vaginal smears will be taken at approximately the same time each day, and the stage of estrous will be determined for each female for three weeks prior to cohabitation for the P_0 females. These evaluations will continue until there is evidence of mating or until the 14-day mating period ends. Care will be taken to ensure that pseudo-pregnancy is not induced.

10.2. MATING PROCEDURE

After both sexes have been exposed to the test substance for ten weeks (premating treatment period), one male and one female from the same exposure group will be caged together until a sign of mating (microscopic observation of sperm in the vaginal smear and/or a copulation plug in the vagina) is observed or for 14 consecutive days. Males and females will not be paired during the mating period while being exposed. The day evidence of mating is observed will be defined as Day 0 of gestation. If mating has not occurred after this interval, the animals will be separated without further opportunity for mating. During mating, cohabitation of male and female littermates will be prohibited.

10.3. PARTURITION AND LACTATION

On Day 18 of gestation, several days prior to expected parturition, each female will be transferred to a solid plastic "shoebox" cage. Bedding substance will be provided and changed at least weekly and as needed. Examination for signs of parturition will be made twice daily (morning and afternoon). Evidence of difficult or prolonged parturition (dystocia), if observed, will be recorded. The day on which parturition is first observed will be defined as Day 0 of lactation. Females which were caged with males but exhibited no evidence of mating, will be transferred to plastic shoe-box cages when the first animals mated reach their day 18 of gestation.

11. TEST SUBSTANCE ADMINISTRATION

11.1. ROUTE OF ADMINISTRATION

Inhalation via whole-body exposures.

11.2. JUSTIFICATION FOR ROUTE OF ADMINISTRATION

The inhalation route is one of the potential routes of human exposure to this test substance and is the route specified in the referenced US EPA 79.61 guidelines.

11.3. JUSTIFICATION FOR EXPOSURE LEVEL SELECTION

Exposure levels were selected by the Sponsor based on results from a 13-week inhalation study conducted at the Testing Facility that utilized this test article in rats (00-6129). The exposure levels were also selected based on the lower flammable limits of the test substance.

11.4. FREQUENCY AND DURATION OF INHALATION ADMINISTRATION

Frequency: P_0 males and females will receive 70 consecutive days (ten weeks) of exposure prior to mating for six hours/day. P_0 males and females will continue to be exposed daily throughout a 14 day cohabitation period. The mated females will continue to be exposed daily from day 0 through 19 of gestation. Beginning on day 5 of lactation, nursing P_0 females will be exposed daily until weaning of the F_1 offspring on Day 28. P_0 females with no confirmed day of mating will continue to be exposed for 25 days following completion of the mating period. P_0 females with a confirmed day of mating that do not deliver will be euthanized on presumed day 25 of gestation.

P_0 males will be exposed daily until euthanasia. P_0 males will be euthanized proximate to the date that the last F_1 litters have been weaned.

Duration: The test substance will be administered for 6 hours/day during all segments of the study.

11.5. TEST SUBSTANCE ADMINISTRATION

The test substance will be administered as a vapor in the breathing air of the animals. The test atmosphere will be generated by an appropriate procedure determined during pre-study trials. The trials will be performed to evaluate the optimal set of conditions and equipment to generate a stable atmosphere at the target exposure levels and maintain uniform conditions throughout the exposure chambers. The method will be described in the raw data of the study and in the report.

The whole-body exposure chambers will each have a volume of approximately 1500 liters. The chambers will be operated at a minimum flow rate of 300 liters per minute. The final airflow will be set to provide at least one air change in 5.0 minutes (12 air changes/hour) and a T_{99} equilibrium time of at most 23 minutes. This chamber size and air flowrate is considered adequate to maintain the oxygen level at least 19% and the animal loading factor below 5%. At the end of the 6-hour exposure, all animals will remain in the chamber for a minimum of 30 minutes. During this time the chamber will be operated at approximately the same flow rate using clean air only.

11.6. EXPOSURE CONCENTRATION DETERMINATION

A nominal exposure concentration will be calculated. The flow of air through the chamber will be monitored using appropriate calibrated equipment. The test substance consumed during the exposure will be divided by the total volume of air passing through the chamber (volumetric flow rate times total exposure time) to give the nominal concentration.

During each exposure, measurements of airborne concentrations will be performed in the animals' breathing zone at least 4 times using an appropriate sampling procedure and IR analytical procedure. Also, one sample per chamber per week will be analyzed by gas chromatography (GC) to characterize at least 10 major components (comprising at least 80% by weight of the test substance) to show test substance stability and comparison between the neat liquid test substance and the vaporized test atmospheres.

If more than the normal amount of trials is required because of test substance generation or monitoring problems (80 technician hours), the Sponsor will be consulted prior to additional trials (additional cost).

11.7. PARTICLE SIZE DISTRIBUTION ANALYSIS

During each week of exposure, particle size determinations will be performed using a TSI Aerodynamic Particle Sizer to characterize the aerodynamic particle size distribution of any aerosol present.

11.8. CHAMBER ENVIRONMENT

Chamber temperature, humidity, airflow rate and static pressure will be monitored continuously and recorded every 30 minutes during exposure. Chamber temperature and relative humidity will be maintained, to the maximum extent possible, between 20 to 24°C and 40 to 60%, respectively. Chamber oxygen levels (maintained at least 19%) will be measured pretest and at the beginning, middle and end of the study.

Air samples will be taken in the vapor generation area pretest and at the beginning, middle and end of the study. Light (maintained approximately 30-40 foot-candles at 1.0 meter above the floor) and noise levels (maintained below 85 decibels) in the exposure room will be measured pretest and at the beginning, middle and end of the study.

11.9. SUMMARY OF CHAMBER ACTIVITY

The minimum frequency of chamber activity is summarized below.

Activity	Frequency/chamber
Measured Test Substance Concentration	4X/day
Measured Test Substance Characterization	1X/week
Particle Size	1X/week
Temperature	13X/day
Relative Humidity	13X/day
Airflow Rate	13X/day
Static Pressure	13X/day
Nominal Test Substance Concentration (excluding the air control chamber)	1X/day
Rotation Pattern of Exposure Cages	1X/week
Loading/Unloading Verification	1X/day

12. EXPERIMENTAL EVALUATIONS

12.1. OBSERVATIONS

12.1.1. VIABILITY EXAMINATIONS (CAGESIDE)

Observations for mortality, and signs of severe toxic or pharmacological effects will be made at least twice daily (morning and afternoon). Animals in extremely poor health or in a possible moribund condition will be identified for further monitoring and possible euthanasia. All animals found dead will be submitted for a macroscopic examination. Parental animals found dead after normal working hours will be refrigerated until a necropsy can be performed.

12.1.2. DETAILED PHYSICAL EXAMINATIONS

The animals will be observed as a group at least once during each exposure.

Each parental generation animal will be removed from its cage and examined at least once pretest (P_0), at the study start (first day of treatment for the P_0) and weekly thereafter during the study period. Females will continue to be observed weekly until there is evidence of mating. Once mated, females will be observed on gestation days 0, 7, 14 and 20 and on lactation days 1, 4, 7, 14, 21 and 28. Females without evidence of mating will continue to be observed weekly until euthanized. Examinations will include, but not be limited to, observations of general condition, skin and fur, eyes, nose, oral cavity, abdomen and external genitalia as well as evaluations of respiration, and palpation for tissue masses. During the exposure period, physical examinations will be performed post-exposure.

12.2. BODY WEIGHTS

Males:

P_0: At least once during pretest, at the time of randomizing into study groups, on the day treatment initiates, weekly throughout the study (including the mating period) and prior to termination.

Females:

P_0: At least once during pretest and at the time of randomizing into study groups.

On the day treatment initiates and weekly during the premating growth and mating periods; gestation - Days 0, 4, 7, 14 and 20; lactation - Days 1, 4, 7, 14, 21 and 28. Females without evidence of mating and that do not deliver pups will be weighed weekly until euthanasia.

12.3. FEED CONSUMPTION

Males:

P_0: One week pretest and during the exposure period of the P_0 group weekly during the premating treatment period (feed consumption will not be measured during the mating period when males will be co-housed) and through the postmating period until euthanasia.

Females:

P_0: One week pretest and during the exposure period of the P_0. Weekly during the premating growth periods (feed consumption will not be measured during the mating period when animals are co-housed) and on day 0, 4, 7, 14 and 20 of gestation and on day 1, 4, 7, 14, 21 and 28 of lactation. Females without evidence of mating and that do not deliver pups will have feed consumption measured weekly until euthanasia.

12.4. LITTER EVALUATIONS (F_1)

12.4.1. OBSERVATIONS

F_1 litters will be observed as soon as possible after delivery for the number of live and dead pups, sex of the pups and pup abnormalities. The anogenital distance will be qualitatively determined on the day of delivery completion for all pups of the F_1 generation (to determine the sex). All F_1 pups in the litter will be uniquely identified by toe tattoo on the day of delivery completion. Thereafter, litters will be observed twice daily (morning, afternoon) for the presence of dead pups. These dead pups and pups euthanized in a moribund condition will be examined to the extent possible for defects and/or cause of death and preserved in neutral, phosphate-buffered 10% formalin. Litter size will be recorded daily from Lactation Day 1 to 28.

12.4.2. CULLING PUPS

On Day 4 of lactation, each F_1 litter with more than 10 pups will be culled to that number with sex distribution equalized (five/sex) when possible. F_1 pups will be culled randomly. Preferential culling of runts will not be performed.

12.4.3. PHYSICAL EXAMINATIONS

Each F_1 pup will be given a physical examination on the day of delivery completion and on day 4, 7, 14, 21and 28 of lactation.

12.4.4. PUP BODY WEIGHT DATA

Individual F_1 pup weights will be recorded on day 1, 4 (precull intervals), 7, 14, 21 and 28 of lactation (postcull intervals).

12.4.5. PUP SEXING DATA

Individual sexing data will be recorded on the day of delivery completion and reconfirmed, and recorded on day 4, 7, 14, 21 and 28 of lactation.

13. POSTMORTEM

13.1. MACROSCOPIC POSTMORTEM EXAMINATION

13.1.1. PARENTAL ANIMALS (P_0)

If a dam is found dead or is euthanized in moribund condition prior to weaning her litter, the dam will be macroscopically examined & tissues retained but no organs will be weighed. The litter will be euthanized and externally examined and discarded (if normal) or preserved (if abnormal).

If a dam entirely loses her litter, she shall resume exposures the next day (if prior to lactation day 5) or will otherwise continue exposures. She will be sacrificed on the initial day of weaning for the study (or later, as practical) and macroscopically examined & tissues retained but no organs will be weighed.

13.1.1.1. Method of Euthanasia

Exsanguination following anesthesia with inhaled carbon dioxide.

13.1.1.2. Moribund Animals

Animals showing signs of severe debility, particularly if death appears imminent will be euthanized to prevent loss of tissues through autolysis.

13.1.1.3. Terminal Necropsy Males (P_0)

P_0 males will be euthanized proximate to the date that the last F_1 litters have been weaned. This will permit some evaluation of fertility (i.e., number of litters delivered) prior to euthanasia.

13.1.1.4. Terminal Necropsy Females (P_0)

All P_0 females with litters will be euthanized on day 28 of lactation.

13.1.1.5. Macroscopic Examination

Complete macroscopic postmortem examinations will be performed on all adult animals, including animals euthanized in a moribund condition or found dead and all abnormal observations will be recorded. The necropsy of the parental animals will include examination of the external surface and all orifices; the external surfaces of the brain and spinal cord; the organs and tissues of the cranial, thoracic, abdominal and pelvic cavities and neck; and the remainder of the carcass. Examination of all parental P_0 females, which were co-housed with P_0 males, will include a vaginal smear examined to determine the stage of the estrous cycle and a count of uterine implantation scars, if present.

13.1.1.6. Organ Weights

The following organs will be weighed at terminal euthanasia of all the P_0 males and females in each group:

P_0 Males	P_0 Females
Epididymides (total and caudal)	Ovaries
Prostate	Uterus (with oviducts and cervix)
Seminal Vesicles With coagulating glands and their fluids	
Testes	
Adrenal Glands	
Brain	
Kidneys	
Liver	

Lungs
Pituitary
Spleen

Prior to weighing, all organs will be carefully dissected and properly trimmed to remove fat and other contiguous tissue in a uniform manner. Organs will be weighed as soon as possible after dissection to avoid drying. Paired organs will be weighed together (gonads will also be weighed separately). Organ weight data will be presented as absolute values and relative to terminal body weight and brain weight. Organ weights will not be recorded for an animal dying spontaneously or euthanized moribund.

13.1.1.7. Tissues Preserved

The following tissues will be obtained at necropsy and preserved for all parental animals:

Males	Females
Epididymis (right)	Ovaries
Prostate	Uterus (with oviducts and cervix)
Seminal Vesicles (with coagulating glands and their fluids)	Vagina
Testis (right)	
Adrenal Glands	
Lungs	
Pituitary	
Macroscopic Lesions	
Target Organs (as determined from this study and previous studies, e.g.13-week inhalation study 00-6129)	

All tissues listed above and brain, kidneys, liver and spleen will be fixed in 10% Neutral Buffered Formalin (NBF) except the testes and epididymides will be fixed in modified Davidson's solution for at least 48 hrs prior to permanent storage in NBF.

13.1.2. F_1 PUPS AND WEANLINGS

13.1.2.1. Method of Euthanasia

F_1 pups and weanlings will be euthanized by exsanguination following anesthesia with inhaled carbon dioxide.

13.1.2.2. Moribund Animals

F_1 pups and weanlings showing signs of severe debility, particularly if death appears imminent, will be euthanized to prevent loss of tissues through autolysis.

13.1.2.3. Dead and Culled Pups (F_1)

F_1 pups found dead at birth will be identified as stillborn or alive but found dead (lung floatation test). F_1 pups found dead during the lactation period will be examined to the extent possible for defects and/or the cause of death, and for the presence or absence of milk in the stomach. Dead pups will not be eviscerated. Viscera will remain intact and the pup will be preserved in 10% NBF. Cannibalized pups will be examined to the extent possible and discarded. Culled F_1 pups will be examined for external abnormalities. If unremarkable, these pups will then be euthanized via IP injection of sodium pentobarbital and discarded. Culled F_1 pups with external abnormalities will be preserved intact in 10% NBF at the discretion of the Study Director.

13.1.2.4. Terminal Necropsy Pups (F_1)

Macroscopic Examination and Tissues Preserved

F_1 pups (randomly selected 3 pups/sex/litter, if possible) will be given a macroscopic examination at weaning on day 28 of lactation for any structural abnormalities or pathological changes. Special attention will be given to the organs of the reproductive system; brain, liver, kidneys, pituitary, adrenal gland, spleen, heart and thymus gland. Abnormal tissues and/or target organs, if identified, will be preserved in 10% neutral buffered formalin (NBF).

Organ Weights

F_1 pups (1 pup/sex/litter, if possible) for which organ weight data will be collected will be randomly selected. The following organs will be weighed from one pup/sex/litter that was selected for complete macroscopic examination at weaning on day 28 of lactation:

brain
spleen
thymus gland

Organ weight data will be presented as absolute values and relative to terminal body weight and brain weight.

Remaining F_1 pups, if any, will be examined for external abnormalities. If unremarkable, these pups will then be euthanized via carbon dioxide asphyxiation and discarded. Remaining F_1 pups with external abnormalities will be preserved intact in 10% NBF at the discretion of the Study Director.

13.1.3. SPERM COUNT, MOTILITY AND MORPHOLOGY ASSESSMENTS

All P_0 males euthanized at termination in each group will have the following sperm evaluations available for analysis: 1) motility; 2) a count of homogenization-resistant testicular sperm; 3) a count of caudal epididymal sperm; and 4) sperm morphology (cauda epididymis). Only samples for the high-exposure and control group will be analyzed if there is no effect in the high-exposure group. Evaluations will be performed by Pathology Associates International, Frederick, MD as follows:

- The right testis and right epididymis from each animal will be removed intact, weighed (testes weighed together) and preserved in modified Davidson's solution for at least 48 hrs prior to permanent storage in NBF for histopathological evaluation.

- The left epididymis will be removed intact, weighed, and frozen on dry ice for transport to Pathology Associates International, Frederick, MD. The epididymides will be stored frozen at -70° C until evaluation for caudal sperm count. Each epididymis will be thawed and the caudal portion removed and weighed. A homogenized sample of the caudal epididymis will be stained and examined using the Hamilton Thorne IVOS sperm analyzer. For each stained preparation, 20 fields will be counted. The total number of sperm in the caudal epididymis will be calculated and adjusted for the caudal epididymal weight. Additionally, for each male two sperm morphology slides will be prepared, stained with Eosin and evaluated for morphological development.

- The left vas deferens will be excised and placed in a prewarmed solution of phosphate buffered saline and 1% Bovine Serum Albumin. After a minimum three minute "swimout" period, a sample will be placed into a Hamilton Thorne IVOS sperm analyzer. Five fields will be selected and stored as digital images. These images will be analyzed for percent motility and transferred to optical media for permanent storage.

- The left testis will be removed and frozen on dry ice for transport to PAI (Frederick, MD). The testis will be stored frozen at -20°C until processed for counting of homogenization-resistant sperm.

  Tissues retained from these evaluations will be discarded following issuance of the final report following consultation with the Sponsor. The Testing Facility will be responsible for the GLP compliance of this subcontractor. All raw data, the protocol and all reports generated at PAI will be maintained. After submission of the final report, all of the above will be shipped to Huntingdon Life Sciences to be archived.

13.1.4. MICROSCOPIC PATHOLOGY EVALUATIONS

Slides of tissues listed in the table in Section 13.1.1.7. will be prepared and stained with hematoxylin and eosin (H&E) and examined microscopically for randomly selected 10 animals/sex/group from P_0 parental animals in the control and high-exposure groups. If microscopic findings indicative of an effect of test substance administration are seen in the initial 10 animals/sex of high-exposure animals, then examinations should be made of those tissues/organs for the remaining control and high-exposure animals and/or all low- and middle-exposure animals (Sponsor consulted, additional cost). [Note: any abnormalities not noted during macroscopic postmortem examinations that are seen during histological processing will be recorded]. Additionally reproductive organs of the low- and middle-exposure animals suspected of reduced fertility (e.g. those that failed to mate, conceive, sire or deliver healthy offspring, or for which estrous cyclicity or sperm number motility or morphology were affected) will also be subjected to microscopic examination for additional cost at the discretion of the Sponsor.

Histopathological examinations of the testes will be conducted to identify potential treatment-related effects such as retained spermatids, missing germ cell layers or types, multinucleated giant cells, or sloughing of spermatogenic cells into the lumen. The examination of the intact epididymis will be of a longitudinal section that will permit

examination of the caput, corpus and cauda regions. These examinations will identify such lesions as sperm granulomas, leukocytic infiltration (inflammation), aberrant cell types within the lumen, or the absence of clear cells in the cauda epididymal epithelium.

Histopathological examination of the ovary will include evaluation of five sections taken at least 100 μm apart from the inner third of each ovary. These examinations can detect depletion of the primordial follicle population and enumerate the total number of primordial follicles for comparison with the ovaries from control animals. These examinations can also confirm the presence or absence of growing follicles and corpora lutea in comparison to control ovaries. Qualitative evaluations of the P_0 animals will be performed by HLS. Quantitative evaluations of the P_0 animals (Sponsor consulted, additional cost) may be performed by Pathology Associates International, Frederick, MD.

14. PRESERVATION OF RECORDS AND SPECIMENS

All data documenting experimental details and study procedures and observations will be recorded and maintained as raw data.

At the completion of the study, all reports, raw data, preserved specimens and retained samples will be maintained in the Testing Facility's Archives for a period of one year after submission of the signed final report.

The Sponsor will be contacted in order to determine the final disposition of these materials. The Sponsor is responsible for all costs associated with the storage of these materials beyond one year from the issuance of the final report and for any costs associated with the shipment of these materials to the Sponsor or to any other facility designated by the Sponsor.

15. STATISTICAL EVALUATIONS

The following items will be analyzed statistically in the final report:

15.1. CONTINUOUS DATA

- Body weights (all recorded intervals - premating, mating, gestation, lactation and postmating)[a]
- Body weight change[a]
  -entire premating period (males and females)
  -over each weighing interval during the gestation and lactation periods to include Days 0-20 of gestation and Days 1-28 of lactation
  -males during the postmating period (weekly and over the entire period)
- Feed consumption values (all recorded intervals)[a]

-premating growth period (weekly)
-postmating period (weekly for males)
-gestation (Days 0-4, 4-7, 7-14, 14-20)
-lactation (all recorded intervals)

- Organ weight data (absolute and relative to the terminal body weight and brain weights)[a]
- Gestation length [a]
- Pup body weights (all recorded intervals during lactation)[a]
- Number of pups (live, dead, total) at birth and during lactation (days 1, 4, 7, 14, 21 and 28)[a]
- Mean sperm count (homogenization-resistant testicular sperm and caudal epididymal sperm) and motility data[b]

[a] Statistical evaluation of equality of means will be made by the appropriate one way analysis of variance (ANOVA) technique, followed by a multiple comparison procedure, if needed. If needed. If ANOVA shows no difference, no additional comparisons will be made. If ANOVA is significant, Dunnett's test will be used to determine which data, if any, differ from the control.

[b] Sperm motility, total count and morphology data will be compared between groups using the Kruskal-Wallis nonparametric ANOVA test.

15.1.1. STATISTICAL ANALYSES CONTINUOUS DATA - MULTIPLE GROUP ANALYSES

Data will be compared between the control and treated groups. All statistical tests will be conducted at the 5% and 1%, two-sided risk levels.

15.1.2. STATISTICAL ANALYSES CONTINUOUS DATA - MULTIPLE GROUP ANALYSES FOR SPERM AND MOTILITY ANALYSIS

If a significant difference occurs ($p<0.05$), the Wilcoxon (Mann-Whitney U) test will be used for pair-wise comparisons of each treated group to the vehicle control group. Statistical analyses will be performed using an IBM compatible computer with SAS computer programs (SAS/STAT User's Guide, 1989).

15.2. INCIDENCE DATA

- Mortality rates
- Mating indices (male and female)
- Pregnancy rates
- Male fertility indices
- Live birth indices
- Pup viability indices (Days 0-4) and lactation indices (Days 4-28)

15.2.1. INCIDENCE DATA ANALYSIS

Analyzed using the Chi-square test (2 x n). If Chi-square analysis is not significant, no additional analyses will be performed. If Chi-square is significant, a Fisher Exact Test with Bonferonni correction will be performed to identify differences between the groups.

16. REPORT

16.1. STATUS REPORT

Periodic verbal and written updates on study progress will be provided by the Study Director. In general, written status reports will be submitted weekly and at termination of the study. These reports will include:

- Exposure data
- Mortality rates
- Mean weekly body weight and body weight gain data
- Mean weekly feed consumption premating period
- Summary of detailed physical examinations
- Mating indices (males and females)
- Male fertility indices
- Pregnancy rates
- Gestation length
- Number of pups at birth (live, dead and total) and number of live pups surviving during lactation
- Mean pup body weights (lactation)
- Individual female litter data
- Maternal gestation and lactation body weights and weight gains
- Maternal feed consumption - gestation/lactation
- Summary of macroscopic postmortem evaluations (adults, weanlings)

16.2. FINAL REPORT

One unbound hard copy and one electronic copy of an audited draft report will be submitted following termination of the study. After receipt and review of the Sponsor's comments, appropriate changes will be made and two hard copies and one electronic copy of a signed, final report will be issued. (Additional copies will be provided at additional cost). The report will minimally include:

16.2.1. GENERAL

- Compliance Statement
- Quality Assurance Statement
- Abstract

- Introduction
- Experimental Design
- Materials and Methods
- Protocol Deviations
- Discussion of study results
- Conclusion and No Observed Effect Level (NOEL) or No-Observed-Adverse-Effect Level (NOAEL) statement, if applicable
- References for experimental methodology
- Senior personnel participating in the study
- Protocol and any amendments

16.2.2. DATA TABULATIONS FOR PARENTAL GENERATIONS

- Mortality - termination history
- Physical in-life observations (summary and individual data presented monthly throughout the study)
- Mating indices
- Pregnancy rates
- Male fertility indices
- Mean body weight data (all interval)
- Mean feed consumption data (all intervals)
- Mean weight gain data (premating, postmating [males], gestation and lactation intervals)
- Estrous cycle data
- Macroscopic postmortem observations (adults, weanlings)
- Microscopic pathology examinations
- Organ weight data (parental and pups)
- Sperm assessment data

16.2.3. DATA TABULATIONS FOR LITTERS AND PUPS

- Mean gestation length
- Mean number of pups (live, dead and total) at birth and live pups at Days 4, 7, 14 and weaning (Day 28)
- Litter survival indices
- Pup live birth index
- Pup viability and lactation indices
- Mean pup body weights (all recorded intervals during lactation)
- Pup sex ratio at birth and weaning
- Pup day of sexual maturation and body weight at sexual maturation
- Pup macroscopic postmortem observations
- Individual female litter data

16.2.4. APPENDICES

All exposure data, analytical methodology and individual animal data (adults, pups) including but not limited to the following will be presented in the appendices: body weight and body weight gain, feed consumption, physical observation data, litter data, organ weight data, sperm assessment data, estrous cycle data, macroscopic postmortem findings, microscopic examination data and feed/water/bedding data.

17. REFERENCES

Dunlap, W.P. and J.A. Duffy (1975) "Fortran IV functions for calculating exact probabilities associated with Z, Chi-square, T and F values." Behav. Res. Methods and Instrumentations, 7:59-60

Dunlap, W.P., M.S. Marx and G.J. Agamy (1981) "Fortran IV functions for calculating probabilities associated with Dunnett's Test", Behav. Res. Methods and Instrumentations, 13:363-366.

Hollander, M. and D.A. Wolf (1973) Nonparametric Statistical Methods, Wiley, New York, NY, pp. 120-123.

Siegel, S. (1956) Nonparametric Statistics for the Behavioral Sciences. McGraw-Hill, pp. 98-99 and 104-106.

Protocol Amendment No. 1

Study Title: Gasoline ETBE Vapor Condensate: A 1-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats

Changes

1. Experimental Design, page 9:

Add: **The data tables for male and female pup body and organ weights should be based upon the unaffected data (i.e., the control group will have N = 13 litters). The data for the released pups will be split according to sex, and the mean, standard deviation and range of values will be presented separately. This should be footnoted to indicate how many litters (and pups) would have been LD 26, LD 27, etc. on the day of necropsy and data collection. For the necropsy data, the data for the released pups will be presented in a separate table, mostly so that any internal observations likely to have been caused by the physical trauma of the incident will not confound interpretation of exposure-related findings (if any) for pups. Those findings judged to be most likely related to the physical trauma of the incident should be footnoted as such. Historical control data for pups could be very useful for this study. This information will be available for evaluation of this report.**

2. Frequency and Duration of Inhalation Administration, page 15:

Revise: P_0 females with no confirmed day of mating but with evidence of pregnancy (weight gain) will continue to be exposed until the presumed Day 19 of gestation. P_0 females with no confirmed day of mating **and with NO evidence of pregnancy (weight gain)** would continue to be exposed for 25 days following completion of the mating period **and then euthanized**.

3. Sperm Count, Motility and Morphology Assessments, page 24:

Add: **If a macroscopic abnormality is noted on the left testis or left epididymis, then the right testis and right epididymis will be transferred to PAI and the left testis and left epididymis will be preserved as indicated for possible histopathology.**

4. Statistical Evaluations/Continuous Data, page 26:

Add: **Estrous Cycle data**[a]

5. Data Tabulations for Litters and Pups, page 29:

Delete: **Pup day of sexual maturation and body weight at sexual maturation**

Reasons for Changes

1. On 18July02 during the LD 25-27 period, 12 litters of control-group pups (109 pups total) were released from their cages during an incident in the animal room; 106 pups

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survived. All of these pups were identified only by their number within the litter, and hence most of these could not be identified as belonging to a particular litter. The laboratory necropsied and collected organ weight data on all 106 pups. The above information is considered how best to present and utilize the data from these pups. These data include LD 28 pup body and organ weights, LD 28 pup necropsy findings from a total of 13 control litters unaffected by the animal room incident and data from the 106 released pups.

2. Clarification of procedures.
3. Clarification of procedures.
4. Oversight in original protocol.
5. The pups are not retained on test until sexual maturation.

Amendment approved by:

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

8 Aug 02
Date

Thomas M. Gray, M.S., DABT
Sponsor Representative
American Petroleum Institute

08 August, 2002
Date

Protocol Amendment No. 2

Study Title: Gasoline ETBE Vapor Condensate: A 1-Generation Whole-Body Inhalation Reproduction Toxicity Study in Rats

Changes

1. Good Laboratory Practices, page 6:
Revise: This study will be conducted in accordance with US EPA 79.60, CFR Vol. 59, No. 122, 27 June 1994. This study will be performed according to protocol and Huntingdon Life Sciences' **and Pathology Associates International's** Standard Operating Procedures.

2. Terminal Necropsy Males, page 21:
Revise: P_0 males will be euthanized **after** ~~proximate to~~ the date that the last F_1 litters have been **delivered** ~~weaned~~

3. Statistical Analysis, pages 27-28:

Revise footnote 'a' to read as follows:

For all parameters except for parental organ weights, the standard one-way analysis of variance (ANOVA) using the F ratio to assess significance will be used (Dunlap and Duffy, 1975). If significant differences among the means are indicated, additional testing will be performed using Dunnet's t-test to determine which means are significantly different from the control (Dunlap et al., 1981).

Parental organ weight data will be analyzed only by parametric methods. Bartlett's test (Sokal and Rohlf, 1995) will be performed to determine if groups have equal variances. The standard one-way analysis of variance (ANOVA) using the F ratio to assess significance will be used (Armitage, 1971). If significant differences among the means are indicated, additional tests will be used to determine which means are significantly different from the control: Dunnett's t-test (Dunnett, 1955, 1964) for homogeneous data, or Cochran and Cox's modified t-test (Cochran and Cox, 1959) for non-homogeneous data.

All t-tests will be conducted at the 5% and 1% significance levels.

Revise footnote 'b' to read as follows:

Mean sperm count and motility data will be compared between groups using the Kruskal-Wallis nonparametric ANOVA test (Kruskal and Wallis, 1952, 1953). If a significant difference occurs ($p<0.05$), the Wilcoxon (Mann-Whitney U) test will be used for pair-wise comparisons of each treated group to the vehicle control group. Statistical analyses will be performed using an IBM compatible computer with SAS computer programs (SAS/STAT User's Guide, 1989).

Add: **For certain parental organ weights (epididymides, prostate, seminal vesicles, testes and ovaries), a supplementary analysis of covariance (ANCOVA) will also be**

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performed. Evaluation of equality of group means will be made by the appropriate statistical method, followed by a multiple comparison test if needed. Bartlett's test (Bartlett, 1937) will be performed to determine if groups had equal variances. If the variances are equal, parametric procedures will be used; if not, nonparametric procedures will be used. The parametric method will be one-way analysis of covariance (ANCOVA), with body weight as a covariate (Armitage, 1971) followed by, Dunnett's test (Dunnett, 1955, 1964) or Williams' test (Williams, 1971, 1972) which will be used to determine whether the adjusted means differed from control. The nonparametric method will be the Kruskal-Wallis test (Kruskal and Wallis, 1952, 1953) followed by, Shirley's test (Shirley, 1977) or Steel's test (Steel, 1959) which are used to determine which means differed from control. Bartlett's test for equality of variance will be conducted at the 1% significance level; all other statistical tests will be conducted at the 5% and 1% significance levels.

Incidence Data Analysis:

Revise: ~~Analyzed using the Chi-square test (2 x n). If Chi-square analysis is not significant, no additional analyses will be performed. If Chi-square is significant, a~~ **A** Fisher Exact Test with Bonferonni correction will be performed to identify differences between the groups.

4. References, page 30:

Revise:

Armitage, P. 1971. Statistical Methods in Medical Research. Oxford, UK: Blackwell Scientific Publications.

Bartlett, M.S. 1937. Properties of sufficiency and statistical tests. Proceedings of the Royal Society, Series A, 160: 268-282.

Cochran, W.G. and Cox, G.M. 1959. *Experimental Designs*, New York: John Wiley.

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Dunlap, W.P., M.S. Marx and G.J. Agamy (1981) "Fortran IV functions for calculating probabilities associated with Dunnett's Test", Behav. Res. Methods and Instrumentations, 13:363-366.

~~Hollander, M. and D.A. Wolf (1973) Nonparametric Statistical Methods, Wiley, New York, NY, pp. 120-123.~~

Protocol Amendment No. 2

Dunnett, C.W. 1955. A multiple comparison procedure for comparing several treatments with a control. *Journal of the American Statistical Association* 50: 1096-1121.

Dunnett, C.W. 1964. New tables for multiple comparisons with a control. *Biometrics* 20-3: 482-491.

Kruskal, W.H. and Wallis, W.A. 1952. Use of Ranks in One-Criterion Variance Analysis. *Journal of the American Statistical Association* 47: 583-621.

Kruskal, W.H. and Wallis, W.A. 1953. Errata for Kruskal-Wallis (1952). *Journal of the American Statistical Association* 48: 907-911.

Shirley, E.A.C. 1977. The analysis of organ weight data. Toxicology 8, 13-22.

Siegel, S. (1956) Nonparametric Statistics for the Behavioral Sciences. McGraw-Hill, pp. 98-99 and 104-106.

Sokal, R.R. and Rohlf, F.J. 1995. *Biometry*. 3rd Edition. San Francisco: W.H. Freeman.

Steel, R.G.D. 1959. A multiple comparison rank sum test: treatments versus control. Biometrics 15: 560-572.

Williams, D.A. 1971. A test for differences between treatment means when several dose levels are compared with a zero dose control. Biometrics 27: 103-117.

Williams, D.A. 1972. The comparison of several dose levels with a zero dose control. *Biometrics* 28: 519-531.

Reasons for Changes

1. Clarification of responsibilities for the Subcontractor.
2. Clarification of sacrifice procedures.
3. Correction of statistical procedures.
4. Deletion and addition of the proper statistical references.

Amendment approved by:

Gary M. Hoffman, B.A., DABT Study Director	1 APR 10 Date
Thomas M. Gray, M.S., DABT Sponsor Representative	3/30/10 Date

	Testing Facility Personnel	Appendix EE

TITLE/DEPARTMENT	NAME/DEGREE
SENIOR VICE PRESIDENT, SAFETY ASSESSMENT	Sylvie J. Gosselin, D.V.M., Ph.D., Diplomate A.C.V.P.
SENIOR DIRECTOR, SAFETY ASSESSMENT	Carol S. Auletta, M.B.A., D.A.B.T., R.A.C.
DIRECTOR, ANALYTICAL SERVICES	Barbara A. Litzenberger, B.S., M.T. (ASCP)
DIRECTOR, TOXICOLOGY OPERATIONS	Ian Vanterpool, F.I.A.T.
DIRECTOR, QUALITY ASSURANCE	Nicki S. Iacono, B.S.
STUDY DIRECTOR	Gary M. Hoffman, B.A., D.A.B.T.
PATHOLOGIST	Katharine M. Whitney, D.V.M., Ph.D., Diplomate A.C.V.P.
STUDY MONITOR	Janet E. Scimone, B.A.
VETERINARIAN	Teresa S. Kusznir, V.M.D.
MANAGER/SUPERVISOR	
Reproductive Toxicology	Robert Faust, B.S.
Inhalation	Ellen H. Whiting, AALAS LAT
Analytical Services	Kay Saladdin, B.S.
Clinical Pathology	Lisa A. Spall, B.S., M.T. (ASCP)
Histology	Janet Kusisto

	Report Amendments	Appendix FF

There are no amendments for this report at this time.