

**TDMS No.** 20302 - 03

**Test Type:** 90-DAY

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

**Species/Strain:** RATS/F 344

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

ALPHA-PINENE

**CAS Number:** 80-56-8

**Pathologist:** GRUMBEIN, S. - LIEUALLEN, W. - RENNE, R. (past)

F1\_R2

**Date Report Reqsted:** 11/17/2006

**Time Report Reqsted:** 07:28:13

**First Dose M/F:** 03/28/05 / 03/29/05

**Lab:** BNW

**C Number:** C20302

**Lock Date:** 12/07/2005

**Cage Range:** ALL

**Date Range:** ALL

**Reasons For Removal:** ALL

**Removal Date Range:** ALL

**Treatment Groups:** Include ALL

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	0	0	0	0	0	0	0	0	0	0	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Esophagus	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Pancreas	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Salivary Glands	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	0	0	0	0	0	0	0	0	0	0	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**CARDIOVASCULAR SYSTEM**

Heart	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Cardiomyopathy				1	1	1	1	1		1	<b>6 1.0</b>

**ENDOCRINE SYSTEM**

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Parathyroid Gland	+	+	+	+	+	+	+	M	+	+	<b>9</b>
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

Epididymis	+	+	+	+	+	+	+	+	+	+	<b>10</b>
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DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	1
	<b>CONTROL</b>	1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

Preputial Gland	+	+	+	+	+	+	+	+	+	+	10
Prostate	+	+	+	+	+	+	+	+	+	+	10
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	10
Testes	+	+	+	+	+	+	+	+	+	+	10

**HEMATOPOIETIC SYSTEM**

Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial	M	M	M	M	M	M	M	M	M	M	0
Lymph Node, Mandibular	M	M	M	M	M	M	M	M	M	M	0
Lymph Node, Mediastinal	+	M	+	+	+	M	+	+	+	M	7
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10

**INTEGUMENTARY SYSTEM**

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	3	
FISCHER 344 RATS MALE		0	0	0	0	0	0	0	0	0	0	
ANIMAL ID		0	0	0	0	0	0	0	0	0	0	
CONTROL		0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0	* TOTALS
Mammary Gland		+	M	M	M	+	+	M	+	M	+	5
Skin		+	+	+	+	+	+	+	+	+	+	10
<b>MUSCULOSKELETAL SYSTEM</b>												
Bone		+	+	+	+	+	+	+	+	+	+	10
<b>NERVOUS SYSTEM</b>												
Brain		+	+	+	+	+	+	+	+	+	+	10
Cerebellum, Mineralization					2							1 2.0
<b>RESPIRATORY SYSTEM</b>												
Larynx		+	+	+	+	+	+	+	+	+	+	10
Lung		+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active									1	1		2 1.0
Nose		+	+	+	+	+	+	+	+	+	+	10
Trachea		+	+	+	+	+	+	+	+	+	+	10

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	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	0	0	0	0	0	0	0	0	0	0	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**SPECIAL SENSES SYSTEM**

Eye	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Harderian Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Accumulation, Hyaline Droplet					2						<b>1 2.0</b>
Nephropathy	1	2	1	1	1	1	1	1	1		<b>9 1.1</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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Lab: BNW

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>25 ppm</b>	2	2	2	2	2	2	2	2	2	2	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

ALIMENTARY SYSTEM

Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Hepatodiaphragmatic Nodule							X				<b>1</b>
Mesentery						+					<b>1</b>
Fat, Necrosis						2					<b>1 2.0</b>

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node										+	<b>1</b>
------------	--	--	--	--	--	--	--	--	--	---	----------

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	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>25 ppm</b>	2	2	2	2	2	2	2	2	2	2	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**INTEGUMENTARY SYSTEM**

NONE

**MUSCULOSKELETAL SYSTEM**

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Accumulation, Hyaline Droplet	1	1	1	1	1	1	2	1	1	1	<b>10 1.1</b>
Casts Granular	1	1	1	1	1	1	1	1	1		<b>9 1.0</b>
Nephropathy	2	1	1	2	2	2	2	1	2	1	<b>10 1.6</b>
.....											
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
	<b>50 ppm</b>	4	4	4	4	4	4	4	4	4	4
		0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**ALIMENTARY SYSTEM**

Liver + + + + + + + + + + **10**

**CARDIOVASCULAR SYSTEM**

NONE

**ENDOCRINE SYSTEM**

NONE

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

NONE

**HEMATOPOIETIC SYSTEM**

Spleen + **1**

**INTEGUMENTARY SYSTEM**

NONE

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	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>50 ppm</b>	4	4	4	4	4	4	4	4	4	4	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**MUSCULOSKELETAL SYSTEM**

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Accumulation, Hyaline Droplet	1	2	2	1	2	2	2	2	2	2	<b>10 1.8</b>
Casts Granular	1	1	1	3	1	1	1	1	1	1	<b>10 1.2</b>
Nephropathy	2	2	2	2	2	2	2	2	2	2	<b>10 2.0</b>
.....											
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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	0	0	0	0	0	0	0	0	0	0
DAY ON TEST	9	9	9	9	9	9	9	9	9	9
	3	3	3	3	3	3	3	3	3	3
.....										
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	0	0	0	0	0	0	0	0	0	0
<b>100 ppm</b>	6	6	6	6	6	6	6	6	6	6
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
										<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Liver	+	+	+	+	+	+	+	+	+	+
										<b>10</b>

**CARDIOVASCULAR SYSTEM**

NONE

**ENDOCRINE SYSTEM**

NONE

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

NONE

**HEMATOPOIETIC SYSTEM**

NONE

**INTEGUMENTARY SYSTEM**

NONE

**MUSCULOSKELETAL SYSTEM**

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	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>100 ppm</b>	6	6	6	6	6	6	6	6	6	6	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Accumulation, Hyaline Droplet	2	2	2	2	2	2	2	2	2	2	<b>10 2.0</b>
Casts Granular	1	1	2	2	2	1	1	1	2	2	<b>10 1.5</b>
Nephropathy	2	2	2	2	2	2	2	2	2	2	<b>10 2.0</b>
.....											
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0
9		9	9	9	9	9	9	9	9	9	9
3		3	3	3	3	3	3	3	3	3	3
.....											
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
<b>200 ppm</b>		8	8	8	8	8	8	8	8	8	8
		0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
											<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Liver + + + + + + + + + + 10

**CARDIOVASCULAR SYSTEM**

NONE

**ENDOCRINE SYSTEM**

Pituitary Gland + 1

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

NONE

**HEMATOPOIETIC SYSTEM**

NONE

**INTEGUMENTARY SYSTEM**

NONE

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 Page 13

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>200 ppm</b>	8	8	8	8	8	8	8	8	8	8	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**MUSCULOSKELETAL SYSTEM**

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Accumulation, Hyaline Droplet	3	2	3	2	3	2	3	3	3	3	<b>10 2.7</b>
Casts Granular	2	3	3	2	2	2	2	3	3	3	<b>10 2.5</b>
Nephropathy	3	2	3	2	2	2	2	3	3	3	<b>10 2.5</b>
.....											
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0
	<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**ALIMENTARY SYSTEM**

Esophagus	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Clear Cell Focus								X			<b>1</b>
Hepatodiaphragmatic Nodule			X								<b>1</b>
Pancreas	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Salivary Glands	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	1
	<b>400 ppm</b>	1	2	3	4	5	6	7	8	9	0

\* TOTALS

Stomach, Glandular Mineralization	+	+	+	+	+	+	+	+	+	+	10	1	1.0
-----------------------------------	---	---	---	---	---	---	---	---	---	---	----	---	-----

**CARDIOVASCULAR SYSTEM**

Heart Cardiomyopathy	+	+	+	+	+	+	+	+	+	+	10	8	1.0
----------------------	---	---	---	---	---	---	---	---	---	---	----	---	-----

**ENDOCRINE SYSTEM**

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	10		
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	10		
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	10		
Parathyroid Gland	+	+	+	+	+	+	+	+	+	+	10		
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	10		
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	10		

**GENERAL BODY SYSTEM**

NONE

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 x .. Lesion present  
 I .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically  
 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
 2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	1	1	1	1	1	1	1	1	1	1
	<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	0
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**GENITAL SYSTEM**

Epididymis	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Granuloma Sperm						2					<b>1 2.0</b>
Preputial Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Prostate	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Testes	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**HEMATOPOIETIC SYSTEM**

Bone Marrow	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Lymph Node, Bronchial	M	M	M	M	M	M	M	M	M	M	<b>0</b>
Lymph Node, Mandibular	M	M	M	M	M	M	M	M	M	M	<b>0</b>
Lymph Node, Mediastinal	+	+	M	M	M	+	+	M	M	M	<b>4</b>
Infiltration Cellular, Mast Cell						3					<b>1 3.0</b>
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Infiltration Cellular, Mast Cell						2					<b>1 2.0</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 x .. Lesion present  
 I .. Insufficient tissue  
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 1-4 .. Lesion qualified as:  
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Page 17

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0
	<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

Spleen + + + + + + + + + + **10**

Thymus + + + + + + + | + + **9**

**INTEGUMENTARY SYSTEM**

Mammary Gland + + M M M M + M + M **4**

Skin + + + + + + + + + + **10**

**MUSCULOSKELETAL SYSTEM**

Bone + + + + + + + + + + **10**

**NERVOUS SYSTEM**

Brain + + + + + + + + + + **10**

**RESPIRATORY SYSTEM**

Larynx + + + + + + + + + + **10**

Lung + + + + + + + + + + **10**

Hemorrhage 3 **1 3.0**

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

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M .. Missing tissue

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

		0	0	0	0	0	0	0	0	0	0		
DAY ON TEST		9	9	9	9	9	9	9	9	9	9		
		3	3	3	3	3	3	3	3	3	3		
<b>FISCHER 344 RATS MALE</b>		0	0	0	0	0	0	0	0	0	0		
	ANIMAL ID	1	1	1	1	1	1	1	1	1	1		
	<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	1		
		1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>	
Inflammation, Chronic Active				1		3		1		1		<b>5 1.4</b>	
Nose		+	+	+	+	+	+	+	+	+	+	<b>10</b>	
Pleura							+					<b>1</b>	
Inflammation, Granulomatous							3					<b>1 3.0</b>	
Trachea		+	+	+	+	+	+	+	+	+	+	<b>10</b>	
<b>SPECIAL SENSES SYSTEM</b>													
Eye		+	+	+	+	+	+	+	+	+	+	<b>10</b>	
Harderian Gland		+	+	+	+	+	+	+	+	+	+	<b>10</b>	
Inflammation, Chronic				3								<b>1 3.0</b>	
<b>URINARY SYSTEM</b>													
Kidney		+	+	+	+	+	+	+	+	+	+	<b>10</b>	
Accumulation, Hyaline Droplet		3	3	3	3	3	3	3	3	3	3	<b>10 3.0</b>	
Casts Granular		3	3	3	3	3	3	3	3	3	3	<b>10 3.0</b>	
Nephropathy		3	3	3	3	3	3	3	3	3	3	<b>10 3.0</b>	
Urinary Bladder		+	+	+	+	+	+	+	+	+	+	<b>10</b>	

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20302 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

ALPHA-PINENE

CAS Number: 80-56-8

Pathologist: GRUMBEIN, S. - LIEUALLEN, W. - RENNE, R. (past)

Date Report Reqsted: 11/17/2006

Time Report Reqsted: 07:28:13

First Dose M/F: 03/28/05 / 03/29/05

Lab: BNW

	0	0	0	0	0	0	0	0	0	0
DAY ON TEST	9	9	9	9	9	9	9	9	9	9
	3	3	3	3	3	3	3	3	3	3
.....										
<b>FISCHER 344 RATS MALE</b>	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	1	1	1	1	1	1	1	1	1	1
<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
	<b>* TOTALS</b>									

\*\*\* END OF MALE DATA \*\*\*

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1
	<b>CONTROL</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**ALIMENTARY SYSTEM**

Esophagus	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Mesentery											<b>1</b>
Fat, Necrosis											<b>2</b>
											<b>1 2.0</b>
Pancreas	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Salivary Glands	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

Stomach, Glandular

+ + + + + + + + + +

10

**CARDIOVASCULAR SYSTEM**

Heart  
Cardiomyopathy

+ + + + + + + + + +  
1 1 1

10

3 1.0

**ENDOCRINE SYSTEM**

Adrenal Cortex

+ + + + + + + + + +

10

Adrenal Medulla

+ + + + + + + + + +

10

Islets, Pancreatic

+ + + + + + + + + +

10

Parathyroid Gland

M + + + + + M + + +

8

Pituitary Gland

+ + + + + + + + + +

10

Thyroid Gland

+ + + + + + + + + +

10

**GENERAL BODY SYSTEM**

NONE

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**GENITAL SYSTEM**

Clitoral Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Ovary	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Uterus	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**HEMATOPOIETIC SYSTEM**

Bone Marrow	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Lymph Node, Bronchial Hemorrhage	M	M	M	M	M	M	M	+	M	M	<b>1</b>
								2			<b>1 2.0</b>
Lymph Node, Mandibular	M	M	M	M	M	M	M	M	M	M	<b>0</b>
Lymph Node, Mediastinal	+	+	M	+	M	+	M	+	M	+	<b>6</b>
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Spleen	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Thymus	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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x .. Lesion present

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1
	<b>CONTROL</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**INTEGUMENTARY SYSTEM**

Mammary Gland	+	+	+	+	+	+	+	+	+	+	10
Skin	+	+	+	+	+	+	+	+	+	+	10

**MUSCULOSKELETAL SYSTEM**

Bone	+	+	+	+	+	+	+	+	+	+	10
------	---	---	---	---	---	---	---	---	---	---	----

**NERVOUS SYSTEM**

Brain	+	+	+	+	+	+	+	+	+	+	10
-------	---	---	---	---	---	---	---	---	---	---	----

**RESPIRATORY SYSTEM**

Larynx	+	+	+	+	+	+	+	+	+	+	10
Lung	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active		1	1	1			1				4 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Trachea	+	+	+	+	+	+	+	+	+	+	10

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l .. Insufficient tissue

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2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>CONTROL</b>	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**SPECIAL SENSES SYSTEM**

Eye	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Harderian Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Nephropathy			1								<b>1 1.0</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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+ .. Tissue examined microscopically

x .. Lesion present

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
.....											
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	3	3	3	3	3	3	3	3	3	3
	<b>25 ppm</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
											<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Mesentery										+	<b>1</b>
Fat, Necrosis										2	<b>1 2.0</b>
Tongue					+						<b>1</b>
Cyst					3						<b>1 3.0</b>

**CARDIOVASCULAR SYSTEM**

NONE

**ENDOCRINE SYSTEM**

NONE

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

Vagina											<b>1</b>
Cyst					+						<b>1 3.0</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

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BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	9	9	9	9	9	9	9	9	9	9
	3	3	3	3	3	3	3	3	3	3
.....										
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	0	0	0	0	0	0	0	0	0	0
<b>25 ppm</b>	3	3	3	3	3	3	3	3	3	3
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
										<b>* TOTALS</b>

**HEMATOPOIETIC SYSTEM**

NONE

**INTEGUMENTARY SYSTEM**

NONE

**MUSCULOSKELETAL SYSTEM**

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

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x .. Lesion present

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2) Mild 4) Marked

TDMS No. 20302 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

ALPHA-PINENE

CAS Number: 80-56-8

Pathologist: GRUMBEIN, S. - LIEUALLEN, W. - RENNE, R. (past)

Date Report Reqsted: 11/17/2006

Time Report Reqsted: 07:28:13

First Dose M/F: 03/28/05 / 03/29/05

Lab: BNW

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>50 ppm</b>	5	5	5	5	5	5	5	5	5	5	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

ALIMENTARY SYSTEM

Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Mesentery			+		+			+			<b>3</b>
Fat, Necrosis			2		2			2			<b>3 2.0</b>

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node			+								<b>1</b>
------------	--	--	---	--	--	--	--	--	--	--	----------

INTEGUMENTARY SYSTEM

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>50 ppm</b>	5	5	5	5	5	5	5	5	5	5	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

NONE

**MUSCULOSKELETAL SYSTEM**

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
9		9	9	9	9	9	9	9	9	9	9
3		3	3	3	3	3	3	3	3	3	3
.....											
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
	7	7	7	7	7	7	7	7	7	7	7
	100 ppm	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
											<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Liver + + + + + + + + + + 10

**CARDIOVASCULAR SYSTEM**

NONE

**ENDOCRINE SYSTEM**

NONE

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

NONE

**HEMATOPOIETIC SYSTEM**

NONE

**INTEGUMENTARY SYSTEM**

NONE

**MUSCULOSKELETAL SYSTEM**

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
	7	7	7	7	7	7	7	7	7	7	7
	100 ppm	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

NONE

**NERVOUS SYSTEM**

NONE

**RESPIRATORY SYSTEM**

NONE

**SPECIAL SENSES SYSTEM**

NONE

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

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M .. Missing tissue

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BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
	<b>200 ppm</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

**ALIMENTARY SYSTEM**

Esophagus	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Pancreas	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Salivary Glands	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

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BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20302 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

ALPHA-PINENE

CAS Number: 80-56-8

Pathologist: GRUMBEIN, S. - LIEUALLEN, W. - RENNE, R. (past)

Date Report Reqsted: 11/17/2006

Time Report Reqsted: 07:28:13

First Dose M/F: 03/28/05 / 03/29/05

Lab: BNW

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	9	9	9	9	9	9	9	9	9	9	
	3	3	3	3	3	3	3	3	3	3	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
<b>200 ppm</b>	9	9	9	9	9	9	9	9	9	9	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

CARDIOVASCULAR SYSTEM

Heart	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Cardiomyopathy		1						1			<b>2 1.0</b>

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Parathyroid Gland	+	+	+	+	+	M	+	+	+	+	<b>9</b>
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
----------------	---	---	---	---	---	---	---	---	---	---	-----------

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		3	3	3	3	3	3	3	3	3	3
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	9	9	9	9	9	9	9	9	9	9
	<b>200 ppm</b>	0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
<b>* TOTALS</b>											

Ovary	+	+	+	+	+	+	+	+	+	+	10
Uterus	+	+	+	+	+	+	+	+	+	+	10

**HEMATOPOIETIC SYSTEM**

Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial	M	M	M	M	M	M	M	M	M	M	0
Lymph Node, Mandibular	M	M	M	M	M	M	M	M	M	M	0
Lymph Node, Mediastinal	+	+	M	+	+	M	M	+	+	+	7
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10

**INTEGUMENTARY SYSTEM**

Mammary Gland	+	+	+	+	+	+	+	+	+	+	10
Skin	+	+	+	+	+	+	+	+	+	+	10

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 x .. Lesion present  
 I .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically  
 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
 2) Mild 4) Marked

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DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	9	9	9	9	9	9	9	9	9	9
	3	3	3	3	3	3	3	3	3	3
.....										
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	0	0	0	0	0	0	0	0	0	0
<b>200 ppm</b>	9	9	9	9	9	9	9	9	9	9
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
										<b>* TOTALS</b>

**MUSCULOSKELETAL SYSTEM**

Bone	+	+	+	+	+	+	+	+	+	+	<b>10</b>
------	---	---	---	---	---	---	---	---	---	---	-----------

**NERVOUS SYSTEM**

Brain	+	+	+	+	+	+	+	+	+	+	<b>10</b>
-------	---	---	---	---	---	---	---	---	---	---	-----------

**RESPIRATORY SYSTEM**

Larynx	+	+	+		+	+	+	+	+	+	<b>9</b>
Lung	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Inflammation, Chronic Active		1	1								<b>2 1.0</b>
Alveolar Epithelium, Hyperplasia					2						<b>1 2.0</b>
Nose	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Trachea	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**SPECIAL SENSES SYSTEM**

Eye	+	+	+		+	+	+	+	+	+	<b>9</b>
Cataract					2						<b>1 2.0</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 x .. Lesion present  
 | .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically  
 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
 2) Mild 4) Marked  
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DAY ON TEST		0	0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	3	
<b>FISCHER 344 RATS FEMALE</b>		0	0	0	0	0	0	0	0	0	0	
ANIMAL ID		0	0	0	0	0	0	0	0	0	0	
<b>200 ppm</b>		9	9	9	9	9	9	9	9	9	9	
		0	0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>
Retina, Atrophy		3										<b>1 3.0</b>
Harderian Gland		+ + + + + + + + + +										<b>10</b>
<b>URINARY SYSTEM</b>												
Kidney		+ + + + + + + + + +										<b>10</b>
Nephropathy		1										<b>1 1.0</b>
Urinary Bladder		+ + + + + + + + + +										<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
		3	9	9	3	9	9	9	3	3	5
		6	3	1	6	3	3	3	6	6	0
.....											
<b>FISCHER 344 RATS FEMALE</b> 400 ppm	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1
		1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
											<b>* TOTALS</b>

**ALIMENTARY SYSTEM**

Esophagus	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Large, Cecum	+	+	A	+	+	+	+	A	+	A	<b>7</b>
Intestine Large, Colon	+	+	A	+	+	+	+	+	+	+	<b>9</b>
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Intestine Small, Duodenum	+	+	A	+	+	+	+	+	+	+	<b>9</b>
Intestine Small, Ileum	+	+	A	+	+	+	+	A	+	A	<b>7</b>
Intestine Small, Jejunum	+	+	A	+	+	+	+	A	+	A	<b>7</b>
Liver	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Pancreas	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Salivary Glands	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

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BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	3	9	9	3	9	9	9	3	3	5	
	6	3	1	6	3	3	3	6	6	0	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	1	1	1	1	1	1	1	1	1	1	
<b>400 ppm</b>	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**CARDIOVASCULAR SYSTEM**

Heart	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Cardiomyopathy										1	<b>1 1.0</b>

**ENDOCRINE SYSTEM**

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Parathyroid Gland	+	+	+	+	+	+	M	+	+		<b>9</b>
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

Clitoral Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
----------------	---	---	---	---	---	---	---	---	---	---	-----------

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	3	9	9	3	9	9	9	3	3	5
	6	3	1	6	3	3	3	6	6	0
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	1	1	1	1	1	1	1	1	1	1
400 ppm	1	1	1	1	1	1	1	1	1	1
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
	<b>* TOTALS</b>									

Ovary	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Uterus	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**HEMATOPOIETIC SYSTEM**

Bone Marrow	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Lymph Node, Bronchial	M	M	M	M	M	M	M	M	M	M	<b>0</b>
Lymph Node, Mandibular	M	M	M	M	M	M	M	M	M	M	<b>0</b>
Lymph Node, Mediastinal	M	+	M	M	+	M	+	M	M	+	<b>4</b>
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Spleen	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Thymus	+	+	+	+	+	+	+	+	+	+	<b>10</b>

**INTEGUMENTARY SYSTEM**

Mammary Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Skin	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 x .. Lesion present  
 I .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically  
 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
 2) Mild 4) Marked

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TDMS No. 20302 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

ALPHA-PINENE

CAS Number: 80-56-8

Pathologist: GRUMBEIN, S. - LIEUALLEN, W. - RENNE, R. (past)

Date Report Reqsted: 11/17/2006

Time Report Reqsted: 07:28:13

First Dose M/F: 03/28/05 / 03/29/05

Lab: BNW

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	3	9	9	3	9	9	9	3	3	5	
	6	3	1	6	3	3	3	6	6	0	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	
<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

MUSCULOSKELETAL SYSTEM

Bone	+	+	+	+	+	+	+	+	+	+	<b>10</b>
------	---	---	---	---	---	---	---	---	---	---	-----------

NERVOUS SYSTEM

Brain	+	+	+	+	+	+	+	+	+	+	<b>10</b>
-------	---	---	---	---	---	---	---	---	---	---	-----------

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	<b>10</b>
--------	---	---	---	---	---	---	---	---	---	---	-----------

Lung	+	+	A	+	+	+	+	+	+	+	<b>9</b>
Inflammation, Chronic Active		1		1		1	1		1		<b>5 1.0</b>

Nose	+	+	+	+	+	+	+	+	+	+	<b>10</b>
------	---	---	---	---	---	---	---	---	---	---	-----------

Trachea	+	+	+	+	+	+	+	+	+	+	<b>10</b>
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SPECIAL SENSES SYSTEM

Eye	+	+	+	+	+	+	+	+	+	+	<b>10</b>
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Harderian Gland	+	+	+	+	+	+	+	+	+	+	<b>10</b>
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\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

	0	0	0	0	0	0	0	0	0	0	
DAY ON TEST	3	9	9	3	9	9	9	3	3	5	
	6	3	1	6	3	3	3	6	6	0	
.....											
<b>FISCHER 344 RATS FEMALE</b>	0	0	0	0	0	0	0	0	0	0	
ANIMAL ID	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1	1	1	1	1	
<b>400 ppm</b>	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	<b>* TOTALS</b>

**URINARY SYSTEM**

Kidney	+	+	+	+	+	+	+	+	+	+	<b>10</b>
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	<b>10</b>

\*\*\* END OF REPORT \*\*\*

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade

+ .. Tissue examined microscopically

x .. Lesion present

l .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked