

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

F1_RE

C Number: C20523
Lock Date: 02/24/2009
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 2.3.1
PWG Approval Date: NONE

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	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
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
	1	2	3	4	5	6	7	8	9	0
* TOTALS										

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Pancreas Inflammation, Chronic Active	+	+	+	+	+	+	+	+	+	1	10 1 1.0
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
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* .. 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
WISTAR HAN RATS MALE	3	3	3	3	3	3	3	3	3	3
0 mg/m3										
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
	1	2	3	4	5	6	7	8	9	0

* TOTALS

Heart	+	+	+	+	+	+	+	+	+	+	10
Cardiomyopathy			1								1 1.0

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	10
Accessory Adrenal Cortical Nodule		X				X		X	X		4
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	10
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	10
Parathyroid Gland	+	+	+	+	+	+	+	+	+	+	10
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	10
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	10

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	10
Preputial Gland	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic				2		2			1		3 1.7
Prostate	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic		2									1 2.0

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DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID			
	9	9	9	9	9	9	9	9	9	9				
3	3	3	3	3	3	3	3	3	3	3				
WISTAR HAN RATS MALE														
0 mg/m3														
	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				
	1	2	3	4	5	6	7	8	9	0				* TOTALS
Inflammation, Chronic Active											1		1 1.0	
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+			10	
Testes	+	+	+	+	+	+	+	+	+	+			10	
HEMATOPOIETIC SYSTEM														
Bone Marrow	+	+	+	+	+	+	+	+	+	+			10	
Lymph Node, Bronchial	+	+	+	+	+	+	+	+	+	+			10	
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+			10	
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+	+	+			10	
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+			10	
Spleen	+	+	+	+	+	+	+	+	+	+			10	
Thymus	+	+	+	+	+	+	+	+	+	+			10	
INTEGUMENTARY SYSTEM														
Mammary Gland	M	M	M	+	M	M	M	M	M	+			2	
Skin	+	+	+	+	+	+	+	+	+	+			10	
MUSCULOSKELETAL SYSTEM														
Bone	+	+	+	+	+	+	+	+	+	+			10	

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DAY ON TEST		0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS MALE		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	
0 mg/m3	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	1
		1	2	3	4	5	6	7	8	9	0

NERVOUS SYSTEM

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

RESPIRATORY SYSTEM

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

Lung + + + + + + + + + + **10**
 Artery, Mineralization 2 **1 2.0**

Nose + + + + + + + + + + **10**
 Inflammation, Chronic 1 **1 1.0**
 Necrosis 1 **1 1.0**
 Olfactory Epithelium, Accumulation, Hyaline Droplet 1 **1 1.0**

Trachea + + + + + + + + + + **10**

SPECIAL SENSES SYSTEM

Eye + + + + + + + + + + **10**

Harderian Gland + + + + + + + + + + **10**
 Inflammation, Chronic 1 1 **2 1.0**

URINARY SYSTEM

Kidney + + + + + + + + + + **10**
 Inflammation 1 **1 1.0**
 Inflammation, Chronic Active 1 **1 1.0**

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CAS Number: TRIMVX

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Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS MALE	DAY ON TEST										ANIMAL ID	
	003	003	003	003	003	003	003	003	003	003		
0 mg/m3	0	0	0	0	0	0	0	0	0	0	0001	
	0	0	0	0	0	0	0	0	0	0	0002	
	0	0	0	0	0	0	0	0	0	0	0003	
	0	0	0	0	0	0	0	0	0	0	0004	
	0	0	0	0	0	0	0	0	0	0	0005	
	0	0	0	0	0	0	0	0	0	0	0006	
	0	0	0	0	0	0	0	0	0	0	0007	
	0	0	0	0	0	0	0	0	0	0	0008	
	0	0	0	0	0	0	0	0	0	0	0009	
	0	0	0	0	0	0	0	0	0	0	0010	
	1	2	3	4	5	6	7	8	9	0		
												* TOTALS
Renal Tubule, Regeneration												2 1.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+		10

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WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 mg/m3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		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																				

ALIMENTARY SYSTEM

Liver + 1
 Inflammation, Focal, Chronic Active 4 1 4.0

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 M .. Missing tissue
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WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 mg/m3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		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																				

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8 1.0
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	10 2.1
Ulcer			1																	1 1.0
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10
Metaplasia, Osseous	1		1																	2 1.0
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	10 1.7
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	10 1.7

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

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Species/Strain: RATS/Wistar Han

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Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS MALE		0	0	0	0	0	0	0	0	0	0	
50 mg/m3		9	9	9	9	9	9	9	9	9	9	
ANIMAL ID		3	3	3	3	3	3	3	3	3	3	
		0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
		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	
											* TOTALS	

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

Skin											1
Ulcer					+						
					3						1 3.0

MUSCULOSKELETAL SYSTEM

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WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	
		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	
50 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
		4	4	4	4	4	4	4	4	4	4	
		0	0	0	0	0	0	0	0	1	0	
											* TOTALS	

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous			1	1	2	1	1	1	2	2	8 1.4
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	3	3	2	3	3	2	2	2	3	2	10 2.5
Lung	+	+	+	+	+	+	+	+	+	+	10
Fibrosis	1	1	1	1	1	1	1	1	1	1	10 1.0
Infiltration Cellular, Histiocyte			1								1 1.0
Inflammation, Chronic Active	1		1	1		1	1	1	1	1	8 1.0
Metaplasia, Osseous			1	1			1		1		4 1.0
Pigmentation		1					1		1		3 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Goblet Cell, Hyperplasia							1				1 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	1	2	1	2	2	2	3	2	3	10 2.0
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	1	2	1	2	2	2	3	2	3	10 2.0

SPECIAL SENSES SYSTEM

NONE

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Lab: BNW

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		9	9	9	9	9	9	9	9	9		
		3	3	3	3	3	3	3	3	3		
50 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0			
		4	4	4	4	4	4	4	4			
		0	0	0	0	0	0	0	1			
		1	2	3	4	5	6	7	8	9	0	* TOTALS

URINARY SYSTEM

NONE

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WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
100 mg/m3		9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	
	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		6	6	6	6	6	6	6	6	6	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0
* TOTALS											

ALIMENTARY SYSTEM

Stomach, Glandular Atrophy

+
2

1
1 2.0

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Testes
Germinal Epithelium, Degeneration

+
2

1
1 2.0

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	
		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	
100 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
		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	
* TOTALS												

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous		1	1			1	1	1	1	1	7 1.0
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	2	3	4	2	2	3	2	3	2	2	10 2.5
Lung	+	+	+	+	+	+	+	+	+	+	10
Fibrosis	1	1	1	1	1	1	1	1	1	1	10 1.0
Infiltration Cellular, Histiocyte	1	1	1	2	1	2	1	1	1	1	10 1.2
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Pigmentation		1		1			1				3 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Goblet Cell, Hyperplasia			1			1		1			3 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	3	2	1	3	3	2	2	3	2	10 2.3
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	3	2	1	3	3	2	2	3	2	10 2.3

SPECIAL SENSES 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		9	9	9	9	9	9	9	9	9		
		3	3	3	3	3	3	3	3	3		
100 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		6	6	6	6	6	6	6	6	6		
		0	0	0	0	0	0	0	0	1		
		1	2	3	4	5	6	7	8	9	0	* TOTALS

URINARY 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

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BLANK .. Not examined microscopically

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2) Mild 4) Marked

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	
200 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0
* TOTALS											

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL 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

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
200 mg/m3	ANIMAL ID	9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	
		0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	
* TOTALS											

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10	
Hyperplasia, Squamous	1	1	2	1	1	1	2	1	3	2		10 1.5
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1		10 1.0
Metaplasia, Squamous	3	3	3	4	4	4	3	3	4	3		10 3.4
Lung	+	+	+	+	+	+	+	+	+	+	10	
Fibrosis	1	1	1	1	1	1	1	2	1	1		10 1.1
Infiltration Cellular, Histiocyte	2	2	2	2	2	2	2	2	2	2		10 2.0
Inflammation, Chronic Active	1	1	1	1	1	1	1	2	1	1		10 1.1
Pigmentation					1							1 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10	
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1		10 1.0
Goblet Cell, Hyperplasia	1	1	1	1	1	1	1	1	1	1		10 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	2	3	3	3	3	2	3	3	3		10 2.7
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	2	3	3	3	3	2	3	3	3		10 2.7
Respiratory Epithelium, Hyperplasia	1	1	1	1	1	1	1	1		1		9 1.0
Respiratory Epithelium, Metaplasia, Squamous		1	1					1		1		4 1.0
Respiratory Epithelium, Necrosis		1										1 1.0

SPECIAL SENSES SYSTEM

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		3	3	3	3	3	3	3	3	3	
200 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	
* TOTALS											

NONE

URINARY 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
	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
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
	1	2	3	4	5	6	7	8	9	0

* TOTALS

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active					1						1 1.0
Metaplasia, Squamous									1		1 1.0
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Pancreas	+	+	+	+	+	+	+	+	+	+	10
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active	1										1 1.0
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

* .. 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	ANIMAL ID
	9	9	9	9	9	9	9	9	9	9	
3	3	3	3	3	3	3	3	3	3	3	
WISTAR HAN RATS MALE	0	0	0	0	0	0	0	0	0	0	
400 mg/m3	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	
	1	2	3	4	5	6	7	8	9	0	
* TOTALS											

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
Heart	+	+	+	+	+	+	+	+	+	+	10
Cardiomyopathy					1						1 1.0

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	10
Accessory Adrenal Cortical Nodule								X	X		2
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	10
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	10
Parathyroid Gland	M	+	+	+	+	+	+	+	+	+	9
Pituitary Gland	+	+	+	+	+	+	+	+	+	M	9
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	10

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	10
Preputial Gland	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic								1	1		2 1.0

* .. 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

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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	ANIMAL ID		
	9	9	9	9	9	9	9	9	9	9			
3	3	3	3	3	3	3	3	3	3	3			
WISTAR HAN RATS MALE													
400 mg/m3													
* TOTALS													
Prostate	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic					2					1			2 1.5
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+			10
Testes	+	+	+	+	+	+	+	+	+	+			10
HEMATOPOIETIC SYSTEM													
Bone Marrow	+	+	+	+	+	+	+	+	+	+			10
Lymph Node, Bronchial	+	+	+	+	+	+	+	+	+	+			10
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+			10
Lymph Node, Mediastinal	+	+	+	+	+	+	M	+	+	+			9
Hyperplasia, Lymphoid	3												1 3.0
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+			10
Spleen	+	+	+	+	+	+	+	+	+	+			10
Thymus	+	+	+	+	+	+	+	+	+	+			10
INTEGUMENTARY SYSTEM													
Mammary Gland	M	M	M	M	M	M	M	M	M	+			1
Skin	+	+	+	+	+	+	+	+	+	+			10
MUSCULOSKELETAL SYSTEM													

* .. 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

WISTAR HAN RATS MALE 400 mg/m3	DAY ON TEST										* TOTALS
	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	0 9 3	
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	0	1
Bone	+	+	+	+	+	+	+	+	+	+	10
NERVOUS SYSTEM											
Brain	+	+	+	+	+	+	+	+	+	+	10
RESPIRATORY SYSTEM											
Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous	2	3	2	2	2	2	3	2	3	3	10 2.4
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	4	3	3	4	3	4	3	3	3	4	10 3.4
Lung	+	+	+	+	+	+	+	+	+	+	10
Fibrosis	2	2	2	2	2	2	2	2	2	2	10 2.0
Infiltration Cellular, Histiocyte	2	2	2	2	2	2	2	2	2	2	10 2.0
Inflammation, Chronic Active	2	2	2	2	2	2	2	2	2	2	10 2.0
Pigmentation	1	1				1					3 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Goblet Cell, Hyperplasia	1	1		1	1	1			1	1	8 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	3	3	3	2	3	3	2	2	2	10 2.5
Respiratory Epithelium, Accumulation, Hyaline Droplet	2				2	3	3	2	2	2	7 2.3
Respiratory Epithelium, Hyperplasia	1	1	1	1	1	1	1	1	1	1	10 1.0
Respiratory Epithelium, Metaplasia, Squamous	1	1	1	1	1		1			1	7 1.0
Trachea	+	+	+	+	+	+	+	+	+	+	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

WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	
		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	
400 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0		
		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	1		
		1	2	3	4	5	6	7	8	9		0

* TOTALS

SPECIAL SENSES SYSTEM

Eye	+	+	+	+	+	+	+	+	+	+	10
Harderian Gland	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic								1			1 1.0

URINARY SYSTEM

Kidney	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active								1			1 1.0
Renal Tubule, Regeneration									1		1 1.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	10

*** END OF MALE DATA ***

* .. 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

WISTAR HAN RATS FEMALE	DAY ON TEST										* TOTALS
	0	0	0	0	0	0	0	0	0	0	
0 mg/m3	9	9	9	9	9	9	9	9	9	9	
	4	4	4	4	4	4	4	4	4	4	
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	1	
	1	2	3	4	5	6	7	8	9	0	

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Pancreas Inflammation, Chronic	+	+	+	+	+	1	+	+	+	+	10 1 1.0
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	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

DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID
	9	9	9	9	9	9	9	9	9	9	
4	4	4	4	4	4	4	4	4	4	4	
0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	
1	1	1	1	1	1	1	1	1	1	1	
0	0	0	0	0	0	0	0	0	0	1	
1	2	3	4	5	6	7	8	9	0	0	
* TOTALS											

Heart + + + + + + + + + + **10**

ENDOCRINE SYSTEM

Adrenal Cortex + + + + + + + + + + **10**
 Accessory Adrenal Cortical Nodule X X **2**

Adrenal Medulla + + + + + + + + + + **10**

Islets, Pancreatic + + + + + + + + + + **10**

Parathyroid Gland + + + + + + + + + + **10**

Pituitary Gland + + + + + + + + + + **10**

Thyroid Gland + + + + + + + + + + **10**

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland + + + + + + + + + + **10**
 Inflammation, Chronic Active 1 **1 1.0**

Ovary + + + + + + + + + + **10**

Uterus + + + + + + + + + + **10**

HEMATOPOIETIC SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically M .. Missing tissue
 X .. Lesion present A .. Autolysis precludes evaluation
 I .. Insufficient tissue BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

WISTAR HAN RATS FEMALE	DAY ON TEST										* TOTALS
	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	0 9 4	
0 mg/m3	ANIMAL ID										* TOTALS
	0 1 0 1	0 1 0 2	0 1 0 3	0 1 0 4	0 1 0 5	0 1 0 6	0 1 0 7	0 1 0 8	0 1 0 9	0 1 0 0	
Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial	+	M	+	M	+	+	M	+	+	+	7
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mediastinal	+	+	+	+	+	+	+	M	+	+	9
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10
INTEGUMENTARY SYSTEM											
Mammary Gland	+	+	+	+	+	+	+	+	+	+	10
Skin	+	+	+	+	+	+	+	+	+	+	10
MUSCULOSKELETAL SYSTEM											
Bone	+	+	+	+	+	+	+	+	+	+	10
NERVOUS SYSTEM											
Brain	+	+	+	+	+	+	+	+	+	+	10
RESPIRATORY SYSTEM											
Larynx	+	+	+	+	+	+	+	+	+	+	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

DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID		
	0	0	0	0	0	0	0	0	0	0			
WISTAR HAN RATS FEMALE	9	9	9	9	9	9	9	9	9	9			
0 mg/m3	4	4	4	4	4	4	4	4	4	4			
	0	0	0	0	0	0	0	0	0	0			
	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	1			
	1	2	3	4	5	6	7	8	9	0			* TOTALS
Inflammation, Chronic			1										1 1.0
Lung	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic Active		1			1		1						3 1.0
Nose	+	+	+	+	+	+	+	+	+	+			10
Trachea	+	+	+	+	+	+	+	+	+	+			10
SPECIAL SENSES SYSTEM													
Eye	+	+	+	+	+	+	+	+	+	+			10
Harderian Gland	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic						1							1 1.0
URINARY SYSTEM													
Kidney	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic Active									1				1 1.0
Pelvis, Inflammation, Chronic	3												1 3.0
Renal Tubule, Regeneration									1				1 1.0
Transitional Epithelium, Hyperplasia	3												1 3.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+			10
Transitional Epithelium, Hyperplasia	1												1 1.0

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		4	4	4	4	4	4	4	4	4	
25 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		3	3	3	3	3	3	3	3	3	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0
* TOTALS											

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL 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

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
25 mg/m3	ANIMAL ID	9	9	9	9	9	9	9	9	9		
		4	4	4	4	4	4	4	4	4		
		0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		3	3	3	3	3	3	3	3	3		
		0	0	0	0	0	0	0	0	1		
		1	2	3	4	5	6	7	8	9	0	
* TOTALS												

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous		1	1	1	1		1	1	1	1	8 1.0
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	2	2	2	2	2	2	2	2	2	2	10 2.0
Lung	+	+	+	+	+	+	+	+	+	+	10
Metaplasia, Osseous							1				1 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	2	2	2	2	2	2	2	2	2	10 2.0
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	2	2	2	2	2	2	2	2	2	10 2.0

SPECIAL SENSES SYSTEM

NONE

URINARY 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 mg/m3		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
		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																			

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL 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

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9	9	9	9	9
50 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5	5	5	5	5	5	5	5	5	5	5	5	5	5
		0	0	0	0	0	0	0	0	0	0	0	0	1	0
		1	2	3	4	5	6	7	8	9	0				
* TOTALS															

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous		1					1		1	1	4 1.0
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	2	2	2	2	2	3	2	2	2	2	10 2.1
Lung	+	+	+	+	+	+	+	+	+	+	10
Fibrosis	1	1	1	1	1	1	1	1	1	1	10 1.0
Infiltration Cellular, Histiocyte									1		1 1.0
Inflammation, Chronic Active	1	1		1	2	1	1	1	1	1	9 1.1
Metaplasia, Squamous			2								1 2.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Foreign Body							X				1
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	3	2	3	1	2	3	3	3	2	10 2.4
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	3		3	1	2	3	3	3	2	9 2.4

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		9	9	9	9	9	9	9	9	9		
		4	4	4	4	4	4	4	4	4		
50 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0		
		5	5	5	5	5	5	5	5	5		
		0	0	0	0	0	0	0	0	1		
		1	2	3	4	5	6	7	8	9	0	* TOTALS

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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		4	4	4	4	4	4	4	4	4	
100 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		7	7	7	7	7	7	7	7	7	
		0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	* TOTALS

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL 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

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100 mg/m3		9	9	9	9	9	9	9	9	9	9	9	9	9	9
		4	4	4	4	4	4	4	4	4	4	4	4	4	4
		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
		7	7	7	7	7	7	7	7	7	7	7	7	7	7
		0	0	0	0	0	0	0	0	0	0	0	0	1	0
		1	2	3	4	5	6	7	8	9	0				

* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous		2	1		1	2		1	2	1	7 1.4
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	2	3	3	2	2	3	3	3	3	3	10 2.7
Lung	+	+	+	+	+	+	+	+	+	+	10
Fibrosis	1	1	1	1	1	1	1	1	1	1	10 1.0
Infiltration Cellular, Histiocyte	1	1	1	2	1	1	2	1	2	1	10 1.3
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	1	10 1.0
Mineralization				1							1 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	1	10 1.0
Goblet Cell, Hyperplasia	1	1				1					3 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	2	3	2	3	3	3	3	2	3	10 2.6
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	2	3	2	3	3	3	3	2	3	10 2.6
Respiratory Epithelium, Hyperplasia	1										1 1.0
Respiratory Epithelium, Metaplasia, Squamous	1	1									2 1.0

SPECIAL SENSES 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		4	4	4	4	4	4	4	4	4	
100 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		7	7	7	7	7	7	7	7	7	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0

* TOTALS

URINARY SYSTEM

Kidney	+										1
Infarct, Multiple	2										1 2.0

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		4	4	4	4	4	4	4	4	4	
200 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	
		9	9	9	9	9	9	9	9	9	
		0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	* TOTALS

ALIMENTARY SYSTEM

Liver	+										1	
Fibrosis	1											1 1.0
Serosa, Mineralization	1											1 1.0

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node												1	
Renal, Infiltration Cellular, Mixed Cell													1 2.0

INTEGUMENTARY 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	
	0	0	0	0	0	0	0	0	0	0	0
9	9	9	9	9	9	9	9	9	9	9	
4	4	4	4	4	4	4	4	4	4	4	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	
9	9	9	9	9	9	9	9	9	9	9	
0	0	0	0	0	0	0	0	0	0	1	
1	2	3	4	5	6	7	8	9	9	0	
* TOTALS											

MUSCULOSKELETAL SYSTEM

Bone	+	1
Maxilla, Inflammation, Chronic Active	2	1 2.0

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	10
Hyperplasia, Squamous	2	1	1	2	2	1	1		2	8 1.5
Inflammation, Chronic Active	1	1	1	1	1	1	1	1	1	10 1.0
Metaplasia, Squamous	3	3	3	3	4	3	3	3	2 4	10 3.1
Lung	+	+	+	+	+	+	+	+	+	10
Fibrosis	1	1	1	1	1	1	1	1	1	10 1.0
Infiltration Cellular, Histiocyte	2	1	2	2	2	2	2	2	2	10 1.9
Inflammation, Chronic Active	1	1	2	1	1	1	1	1	1	10 1.1
Nose	+	+	+	+	+	+	+	+	+	10
Foreign Body				X						1
Inflammation, Suppurative	1	1	1	1	1	1	1	1	1	10 1.0
Goblet Cell, Hyperplasia	1		1	1	1	1	1	1	1	9 1.0
Olfactory Epithelium, Accumulation, Hyaline Droplet	2	3	3	3	2	2	3	3	2	10 2.6
Respiratory Epithelium, Accumulation, Hyaline Droplet	2	3	3	3	2	2	3	3	2	10 2.6
Respiratory Epithelium, Hyperplasia	1	1	1	1	1	1	1	1	1	10 1.0

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

First Dose M/F: 07/14/08 / 07/14/08

Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID		
	0	0	0	0	0	0	0	0	0	0			
WISTAR HAN RATS FEMALE	9	9	9	9	9	9	9	9	9	9			
200 mg/m3	4	4	4	4	4	4	4	4	4	4			
	0	0	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	0	0			
	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			
* TOTALS													
Respiratory Epithelium, Metaplasia, Squamous	1				1	1			1	1			5 1.0

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

Kidney											+		1	
Dilatation											3			1 3.0
Bilateral, Pelvis, Inflammation, Chronic Active											3			1 3.0

* .. 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	
WISTAR HAN RATS FEMALE	0	0	0	0	0	0	0	0	0	0	
	9	9	9	9	9	9	9	9	9	9	
	4	4	4	4	4	4	4	4	4	4	
	<hr/>										
400 mg/m3	ANIMAL ID	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	0	1
	1	2	3	4	5	6	7	8	9	0	
* TOTALS											

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
Heart	+	+	+	+	+	+	+	+	+	+	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

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
WISTAR HAN RATS FEMALE		0	0	0	0	0	0	0	0	0	0
		9	9	9	9	9	9	9	9	9	9
		4	4	4	4	4	4	4	4	4	4
	400 mg/m3	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
		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
* TOTALS											

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	10
Accessory Adrenal Cortical Nodule			X					X	X		3
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	10
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	10
Parathyroid Gland	+	+	+	+	+	+	M	+	+	+	9
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	10
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	10

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic			1			1	1				3 1.0
Ovary	+	+	+	+	+	+	+	+	+	+	10
Oviduct								+			1
Infiltration Cellular, Polymorphonuclear								1			1 1.0
Uterus	+	+	+	+	+	+	+	+	+	+	10
Endometrium, Hyperplasia, Cystic					1		2				2 1.5

* .. 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
	0	0	0	0	0	0	0	0	0	0
9	9	9	9	9	9	9	9	9	9	9
4	4	4	4	4	4	4	4	4	4	4
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

* TOTALS

HEMATOPOIETIC SYSTEM

Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node	+										1
Deep Cervical, Infiltration Cellular, Polymorphonuclear	2										1 2.0
Lymph Node, Bronchial	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	M	9
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10

INTEGUMENTARY SYSTEM

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

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

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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	ANIMAL ID
	9	9	9	9	9	9	9	9	9	9	
4	4	4	4	4	4	4	4	4	4	4	
	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	
* TOTALS											

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

RESPIRATORY SYSTEM

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

Hyperplasia, Squamous 1 2 2 2 2 2 1 2 2 2 **10 1.8**

Inflammation, Chronic Active 1 1 1 1 1 1 1 1 1 1 **10 1.0**

Metaplasia, Squamous 3 3 4 3 4 3 3 4 4 3 **10 3.4**

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

Fibrosis 2 2 2 2 2 2 2 2 2 2 **10 2.0**

Infiltration Cellular, Histiocyte 2 2 2 2 2 2 2 2 2 2 **10 2.0**

Inflammation, Chronic Active 2 2 2 2 2 2 2 2 2 2 **10 2.0**

Nose + + + + + + + + + + **10**

Inflammation, Suppurative 1 1 1 1 1 1 1 1 1 1 **10 1.0**

Goblet Cell, Hyperplasia 1 1 1 1 1 1 1 1 1 1 **9 1.0**

Olfactory Epithelium, Accumulation, Hyaline Droplet 3 2 3 3 3 2 2 3 2 3 **10 2.6**

Respiratory Epithelium, Accumulation, Hyaline Droplet 3 2 3 3 3 2 2 3 2 3 **10 2.6**

Respiratory Epithelium, Hyperplasia 1 1 1 1 1 1 1 1 1 1 **10 1.0**

Respiratory Epithelium, Metaplasia, Squamous 1 1 1 1 1 1 1 1 1 1 **7 1.0**

Trachea + + + + + + + + + + **10**

SPECIAL SENSES SYSTEM

Eye + + + + + + + + + + **10**

Harderian Gland + + + + + + + + + + **10**

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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	
	WISTAR HAN RATS FEMALE	0	0	0	0	0	0	0	0	0	0
400 mg/m3	9	9	9	9	9	9	9	9	9	9	
ANIMAL ID	4	4	4	4	4	4	4	4	4	4	
	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	
	* TOTALS										
Inflammation, Chronic	1			1							2 1.0
URINARY SYSTEM											
Kidney	+	+	+	+	+	+	+	+	+	+	10
Pelvis, Inflammation, Chronic Active	3										1 3.0
Renal Tubule, Regeneration	1										1 1.0
Transitional Epithelium, Hyperplasia	2										1 2.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	10

*** END OF REPORT ***

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