

Experiment Number: 20523 - 03
Test Type: CHRONIC
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: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

F1_RE

NTP Study Number: C20523
Lock Date: 06/04/2012
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 3.0.2.2_002
PWG Approval Date: NONE

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WISTAR HAN RATS MALE	DAY ON TEST																									males (cont...)
	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	
Control	7	7	7	7	7	7	7	7	7	7	5	7	6	6	7	7	7	6	7	7	7	7	7	6	6	
	3	2	2	3	3	3	3	3	3	2	3	2	6	3	3	3	7	3	1	2	2	2	3	2	9	
	0	9	9	0	0	1	0	0	1	9	1	6	2	0	0	0	0	5	0	6	9	9	9	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Cecum Inflammation Artery, Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	1																							
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Duodenum Artery, Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	1																							
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver Angiectasis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
																			1					
Basophilic Focus	X						X							X										
Clear Cell Focus	X	X		X				X						X	X	X						X	X	
Eosinophilic Focus																				X				
Hepatodiaphragmatic Nodule																								
Bile Duct, Dilatation									4															
Bile Duct, Hyperplasia																		1						1
Mesentery Fat, Necrosis																								

* .. 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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WISTAR HAN RATS MALE	DAY ON TEST																									males (cont...)	
	0730	0739	0779	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773			
Control	ANIMAL ID																										
	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015	0016	0017	0018	0019	0020	0021	0022	0023	0024	0025		
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Inflammation																										1	
Acinus, Atrophy	1						1				2										1			1			
Artery, Inflammation																				1							
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Cyst																											
Inflammation													2											2			
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Artery, Inflammation	1																										
CARDIOVASCULAR SYSTEM																											
Blood Vessel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Cardiomyopathy	1	1	2		1			1	1		1		1		1					2				2	1		
ENDOCRINE SYSTEM																											
Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Angiectasis						1																			1		
Hypertrophy				1		2		2			2										1	1	1		1		
Necrosis	2															2											
Vacuolization Cytoplasmic	2			1				1	1		X	1		2		1					1	1			1		
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		

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WISTAR HAN RATS MALE Control	DAY ON TEST																									males (cont...)
	0730	0739	0779	0773	0773	0771	0770	0770	0771	0759	0771	0766	0766	0777	0777	0777	0766	0777	0777	0772	0772	0779	0773	0772	0779	
ANIMAL ID	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
Hyperplasia																										
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Parathyroid Gland Fibrosis	+	+	+	M	M	M	+	+	+	+	+	+	+	M	+	+	+	+	M	M	+	+	+	+	M	
Pituitary Gland Angiectasis Cyst Pars Distalis, Hyperplasia	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thyroid Gland C-cell, Hyperplasia Follicle, Hyperplasia	2		1		1							1												1	1	
	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	1	1	1			1	2	1	2	1	1	1			2	1	1		2	2	1	1	1	1	1	1
						1	2																			

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Preputial Gland Cyst Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
			1		2	1			1	1	2		2			1				1				1	1	
Prostate Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	2					1				2			2						1					2		

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Wistar Han Rats Male Control	DAY ON TEST																									males (cont...)
	0730	0739	0772	0779	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777	0777		
ANIMAL ID	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015	0016	0017	0018	0019	0020	0021	0022	0023	0024	0025	
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Fibrosis							2																			
Inflammation												2			1								3			
Testes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Edema						2																				
Artery, Inflammation, Chronic															3								2			
Germinal Epithelium, Atrophy															2					2	2					
Interstitial Cell, Hyperplasia										2									2							
HEMATOPOIETIC SYSTEM																										
Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Lymph Node																										
Iliac, Hyperplasia, Plasma Cell																										
Lumbar, Hyperplasia, Plasma Cell											2									3			2	3	2	
Renal, Hyperplasia, Plasma Cell																										
Lymph Node, Bronchial	+	+	+	M	+	+	+	+	+	+	+	+	M	+	+	+	+	M	M	+	+	M	+	M	+	
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	
Hyperplasia, Plasma Cell																										
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+	+	+	+	+	+	I	+	M	+	+	M	+	+	+	+	+	+	
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Hematopoietic Cell Proliferation						1									1										1	

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DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	males (cont...)	
WISTAR HAN RATS MALE	7	7	7	7	7	7	7	7	7	5	7	6	6	7	7	7	6	7	7	7	7	7	6		
	3	2	2	3	3	3	3	3	3	2	3	2	6	3	3	3	7	3	1	2	2	2	2		
Control	0	9	9	0	0	1	0	0	0	1	9	1	6	2	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	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	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	2	2	2	2		
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5

Lymphoid Follicle, Atrophy

1 2

Thymus
 Atrophy

+ + + + + M + + + + + + + + + + + + + + + + + +
 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 2 2

INTEGUMENTARY SYSTEM

Mammary Gland
 Galactocele
 Hyperplasia

M M M M M + M M M M M M M M M M M M M M M M + + M M

Skin
 Cyst Epithelial Inclusion
 Hyperkeratosis
 Inflammation
 Ulcer

+
 4
 2 2 2 2 2 2
 2 2 2 2

MUSCULOSKELETAL SYSTEM

Bone

+ +

Skeletal Muscle

+ +

NERVOUS SYSTEM

Brain
 Compression
 Degeneration
 Gliosis
 Hemorrhage
 Hydrocephalus

+
 2
 2

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 Lab: BNW

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | males
(cont...) | |
|----------------------|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|---|
| WISTAR HAN RATS MALE | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Control | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 6 |
| | | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 6 | 3 | 3 | 3 | 7 | 3 | 1 | 2 | 2 | 2 |
| | | 0 | 9 | 9 | 0 | 0 | 1 | 0 | 0 | 1 | 9 | 1 | 6 | 2 | 0 | 0 | 0 | 5 | 0 | 6 | 9 | 9 | 9 |
| 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 | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |

Meninges, Inflammation

Peripheral Nerve

Spinal Cord

+ +
 + +

RESPIRATORY SYSTEM

| | |
|---|---|
| Larynx | + |
| Foreign Body | |
| Infiltration Cellular, Mixed Cell | |
| Inflammation, Chronic Active | |
| Epiglottis, Metaplasia, Squamous | 1 |
| Lung | + |
| Fibrosis | |
| Infiltration Cellular, Histiocyte | 1 1 1 |
| Inflammation, Chronic Active | 1 1 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 1 |
| Alveolar Epithelium, Hyperplasia | 2 1 1 |
| Nose | + |
| Foreign Body | |
| Inflammation, Suppurative | 1 1 1 |
| Goblet Cell, Hyperplasia | 1 1 2 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 2 1 1 1 1 1 1 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 1 1 1 1 |
| Respiratory Epithelium, Hyperplasia | 1 1 |
| Transitional Epithelium, Hyperplasia | 1 1 2 |

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| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|----------------------|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|
| WISTAR HAN RATS MALE | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Control | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | | |
| ANIMAL ID | | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 6 | 3 | 3 | 3 | 7 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 9 | | |
| | | 0 | 9 | 9 | 0 | 0 | 1 | 0 | 0 | 1 | 9 | 1 | 6 | 2 | 0 | 0 | 0 | 5 | 0 | 6 | 9 | 9 | 9 | 0 | 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 | 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 | 0 | 0 | 0 | 0 | 0 | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |

Transitional Epithelium, Metaplasia, Squamous 1

Trachea +

SPECIAL SENSES SYSTEM

Eye +
Retina, Atrophy 2 2 2

Harderian Gland +
Hyperplasia
Inflammation

Lacrimal Gland +
Atrophy

Zymbal's Gland +

URINARY SYSTEM

Kidney +
Hydronephrosis
Nephropathy 4 1 1 1 1 1 1 1 1 1 4 3 1 4 1 1
Pelvis, Inflammation 1 1 1 1 2 2 1 1 1 1

Urinary Bladder +

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| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|----------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
| | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | 0753 | 0754 | | 0755 |
| Control | 0026 | 0027 | 0028 | 0029 | 0030 | 0031 | 0032 | 0033 | 0034 | 0035 | 0036 | 0037 | 0038 | 0039 | 0040 | 0041 | 0042 | 0043 | 0044 | 0045 | 0046 | 0047 | 0048 | 0049 | 0050 | 50 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|--|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Large, Cecum
Inflammation
Artery, Inflammation | + | + | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 3.0
1 1.0 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Small, Duodenum
Artery, Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 1.0 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Liver
Angiectasis
Basophilic Focus
Clear Cell Focus
Eosinophilic Focus
Hepatodiaphragmatic Nodule
Bile Duct, Dilatation
Bile Duct, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 5 1.0
5
14
2
1
1 4.0
2 1.0 |
| Mesentery
Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | + | + | + | 2 | 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
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | 0753 | 0754 | |
| Control | 0026 | 0007 | 0008 | 0009 | 0010 | 0011 | 0012 | 0013 | 0014 | 0015 | 0016 | 0017 | 0018 | 0019 | 0020 | 0021 | 0022 | 0023 | 0024 | 0025 | 0026 | 0027 | 0028 | 0029 | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Acinus, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.1 |
| Artery, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Artery, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cardiomyopathy | | 1 | | | | | | | | | | 2 | | | 1 | 1 | 2 | 1 | | 2 | 1 | 2 | | | 21 1.3 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | 4 1.0 |
| Hypertrophy | | | | 1 | 2 | | | | | | | | | | | | 1 | 2 | 1 | | | | | | 13 1.4 |
| Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | 2 2.0 |
| Vacuolization Cytoplasmic | | 1 | | 1 | 1 | | 1 | | | 1 | | | | 1 | | | 1 | 1 | | | | | | | 19 1.1 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| <p>* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue</p> <p>M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically</p> <p>1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|--------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|------|--------|
| | 0731 | 0732 | 0739 | 0731 | 0733 | 0732 | 0722 | 0722 | 0722 | 0721 | 0703 | 0709 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0706 | 0705 | 0706 | 0705 | | 0704 | 0705 | 0704 | |
| ANIMAL ID | 00026 | 00007 | 00008 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland
Fibrosis | + | + | M | + | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | 39 | 1 1.0 |
| Pituitary Gland
Angiectasis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 1.0 |
| Cyst | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1.0 |
| Pars Distalis, Hyperplasia | | 1 | | | | | | | | | | | | 1 | | | | | | | 1 | 1 | 1 | 1 | | | | 12 | 1.1 |
| Thyroid Gland
C-cell, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 36 1.3 |
| Follicle, Hyperplasia | 2 | | 1 | 1 | 1 | | | 2 | | | | | 2 | 1 | | | 1 | | 1 | 2 | 1 | 1 | 1 | | 1 | 1 | 2 | 4 | 1.5 |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-------|--------|
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Preputial Gland
Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 49 | 1 2.0 | |
| Inflammation | | 1 | | | | 1 | | 2 | | 1 | | | | | | | | | | | 1 | | | | 1 | | | 17 | 1.2 |
| Prostate
Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 17 1.4 |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Male
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | |
|---------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-----|-----|
| | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | | | | | | | |
| ANIMAL ID | 00026 | 00027 | 00028 | 00029 | 00030 | 00031 | 00032 | 00033 | 00034 | 00035 | 00036 | 00037 | 00038 | 00039 | 00040 | 00041 | 00042 | 00043 | 00044 | 00045 | 00046 | 00047 | 00048 | 00049 | 00050 | | |
| Lymphoid Follicle, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 2.0 | |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | 48 | | |
| Atrophy | 2 | 2 | 2 | | 2 | 2 | 1 | 2 | | 1 | 2 | | | | 2 | | 2 | | 2 | 2 | 2 | | 3 | 2 | 35 | 1.9 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | + | M | M | M | M | M | M | M | 4 | | |
| Galactoceles | | | | | | | | | | | | | | | | | 3 | | | | | | | | 1 | 3.0 | |
| Hyperplasia | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | 1.0 | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | X | | | | X | | | | 2 | | |
| Hyperkeratosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4.0 | |
| Inflammation | | | | | 2 | | | | | | | | | | | | | | | | | | | | 2 | 2.0 | |
| Ulcer | 2 | | | | | | | | | 2 | | | | | | 2 | 2 | | | | | | 2 | 2 | 2 | 16 | 2.0 |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | + | | | | | | + | | 4 | | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Compression | | | | | | | | | 3 | 3 | | 2 | | | 3 | | 2 | | | | | | | 4 | 3 | 8 | 2.8 |
| Degeneration | | | | | 2 | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Gliosis | | | | | 2 | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Hemorrhage | | | | | 2 | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Hydrocephalus | | | | | | | | | 3 | | | | | | 3 | | | | | | | | | 3 | 2 | 5 | 2.6 |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|--------|--|
| | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | | | | | | | |
| Control | 00026 | 00027 | 00028 | 00029 | 00030 | 00031 | 00032 | 00033 | 00034 | 00035 | 00036 | 00037 | 00038 | 00039 | 00040 | 00041 | 00042 | 00043 | 00044 | 00045 | 00046 | 00047 | 00048 | 00049 | 00050 | | |
| Meninges, Inflammation | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Infiltration Cellular, Mixed Cell | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Epiglottis, Metaplasia, Squamous | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 3 1.0 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | 4 1.0 | |
| Infiltration Cellular, Histiocyte | | | | | | | | | | | | | | | | | | | | | | | | | | 14 1.0 | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.0 | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 4 1.0 | |
| Alveolar Epithelium, Hyperplasia | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 11 1.2 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Inflammation, Suppurative | | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.1 | |
| Goblet Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 5 1.4 | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | | | | | | | | | | | | | 20 1.4 | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | | | | | | | | | | | | | 10 1.2 | |
| Respiratory Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 | |
| Transitional Epithelium, Hyperplasia | 2 | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.3 | |

* .. 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

Experiment Number: 20523 - 03

Test Type: CHRONIC

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: 10/29/2014

Time Report Requested: 10:15:41

First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|------|------|
| | 0731 | 0732 | 0739 | 0731 | 0733 | 0730 | 0732 | 0732 | 0732 | 0731 | 0733 | 0739 | 0730 | 0737 | 0737 | 0732 | 0732 | 0733 | 0733 | 0732 | 0732 | 0731 | 0732 | 0736 | | 0735 | 0736 | 0735 | 0734 |
| Control | 0026 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 |
| Transitional Epithelium, Metaplasia, Squamous | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Retina, Atrophy | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | 2.0 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lacrimal Gland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Hydronephrosis | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Nephropathy | 1 | 1 | | 1 | 1 | 1 | | 1 | | | | | 2 | 2 | | | | | 4 | 2 | 1 | 3 | 1 | | | | 1 | 27 | |
| Pelvis, Inflammation | 2 | | | | | | | 1 | 1 | | | | 1 | | | | 1 | 1 | 1 | | | | | | | | 1 | 19 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. 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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1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 20523 - 03
Test Type: CHRONIC
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: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|----------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 10 mg/m3 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 5 | | | |
| | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 7 | 2 | 7 | 2 | 7 | | | |
| | 1 | 0 | 0 | 1 | 9 | 5 | 0 | 9 | 1 | 0 | 1 | 4 | 0 | 9 | 0 | 1 | 2 | 9 | 5 | 9 | 3 | 9 | 9 | 1 | | | |
| | 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 | 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 | 2 | 2 | 2 | 2 | 2 | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | |

Acinus, Atrophy

Salivary Glands

Stomach, Forestomach

Stomach, Glandular

CARDIOVASCULAR SYSTEM

Blood Vessel

Heart
Cardiomyopathy

ENDOCRINE SYSTEM

Adrenal Cortex
Angiectasis
Hypertrophy
Vacuolization Cytoplasmic

Adrenal Medulla
Hyperplasia

Islets, Pancreatic

Parathyroid Gland
Hyperplasia

Pituitary Gland

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | |
|----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|------|
| | 0731 | 0733 | 0730 | 0731 | 0732 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | 0753 | 0754 | | | 0755 |
| | 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 | 0020 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 5 | 0000 | |
| | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 2 | 7 | 2 | 2 | 3 | 7 | 1 | 0000 | |
| | 1 | 0 | 0 | 1 | 9 | 5 | 0 | 9 | 1 | 0 | 1 | 4 | 0 | 9 | 0 | 1 | 2 | 9 | 5 | 3 | 7 | 2 | 2 | 0 | 7 | 1 | 0000 | |
| | 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 | 0000 | |
| | 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 | 0000 | |
| | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0000 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0000 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 1 | 1111 | |

Cyst
 Pars Distalis, Hyperplasia

1 1 1 1 1 2 1 1 1

Thyroid Gland
 C-cell, Hyperplasia
 Follicle, Hyperplasia

+
 1 2 2 2 2 2 1 2 2 2 1 1 3 1 1 1 1 1 1 1 1 1 1 1

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis
 Granuloma Sperm

+
 2

Preputial Gland
 Inflammation

+
 1 1 1 1 1 1 1 1

Prostate
 Atrophy
 Fibrosis
 Inflammation

+
 1 1 1 1 1 2 1 1

Seminal Vesicle

+ +

Testes
 Edema
 Germinal Epithelium, Atrophy

+
 2
 4 2

HEMATOPOIETIC 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 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | males (cont...) | | | | |
|------------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | | | |
| 10 mg/m3 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 5 |
| | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 7 | 2 | 2 | 3 | 7 | |
| | 1 | 0 | 0 | 1 | 9 | 5 | 0 | 9 | 1 | 0 | 1 | 4 | 0 | 9 | 0 | 1 | 2 | 9 | 5 | 9 | 3 | 9 | 2 | 1 | |
| | 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 | 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 | 2 | 2 | 2 | 2 | 2 | 2 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node | | | | | | | | | | + | + | | | | | | | | | | | | + | | |
| Axillary, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | |
| Iliac, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Lumbar, Hyperplasia, Plasma Cell | | | | | | | | | | 2 | 3 | | | | | | | 3 | | | | | | | |
| Lymph Node, Bronchial | + | + | + | M | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia, Lymphohistiocytic | | 3 | | | 1 | | 2 | | 1 | | | | 1 | | | | 1 | | | | 1 | | 1 | | |
| Lymph Node, Mandibular | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + |
| Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | 3 | | |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia, Lymphohistiocytic | | 2 | | | | | 1 | 1 | | 2 | | | | 1 | | | 1 | 1 | 2 | 1 | 1 | 2 | | 1 | |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst | | | | | | | | | | | | | | | | | | | | | | 2 | | | |
| Hematopoietic Cell Proliferation | | | | | 1 | | | | | 1 | 1 | | | 1 | | | | | | | | 1 | | | |
| Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Atrophy | 2 | 2 | 2 | | | | | | 2 | 1 | 2 | | 4 | 2 | | 1 | 1 | 3 | 3 | | 2 | 2 | 2 | 2 | 3 |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | M | + | M | + | M | + | M | M | + | M | M | M | M | M | M |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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Cyst Epithelial Inclusion X
 Inflammation 2
 Ulcer 3 2 2 2 2 2 2

MUSCULOSKELETAL SYSTEM

Bone +
 Skeletal Muscle + + +

NERVOUS SYSTEM

Brain +
 Compression 1 1 4 2 3
 Hydrocephalus 2 3
 Peripheral Nerve + +
 Spinal Cord + +

RESPIRATORY SYSTEM

Larynx +
 Infiltration Cellular, Mixed Cell 1 1 1
 Inflammation, Chronic Active
 Epiglottis, Hyperplasia, Squamous 1 1 1 2 1 1 1 1 1 1 2
 Epiglottis, Metaplasia, Squamous 1 1 1 2 1 2 2 1 1 1 2 2 1 1 1 1 1 2
 Lung +
 Fibrosis 1
 Hyperplasia, Lymphohistiocytic 1

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

Experiment Number: 20523 - 03
Test Type: CHRONIC
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: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS MALE

10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|
| | 0731 | 0733 | 0733 | 0733 | 0732 | 0731 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | | |
| Infiltration Cellular, Histiocyte | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | | | | |
| Inflammation, Chronic Active | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | | | 2 | | 2 | 1 | | | 1 | 1 | 1 | 1 | 3 | |
| Alveolus, Proteinosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mediastinum, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Inflammation, Suppurative | | 1 | | 2 | 2 | 2 | 1 | 1 | | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | |
| Glands, Olfactory Epithelium, Hyperplasia | | 2 | 2 | | 2 | 2 | 2 | 2 | 1 | | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | | | 1 | 1 | 2 | 2 | 1 | 1 | 1 | |
| Goblet Cell, Hyperplasia | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | | | | | | | 1 | |
| Goblet Cell, Nasolacrimal Duct, Metaplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nasolacrimal Duct, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nasolacrimal Duct, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | |
| Olfactory Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | |
| Respiratory Epithelium, Hyperplasia | | | 1 | | | | | | | | | 1 | 1 | | | | | | | | | | 1 | 1 | | | | |
| Transitional Epithelium, Hyperplasia | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

SPECIAL SENSES SYSTEM

| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| * .. 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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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Experiment Number: 20523 - 03
Test Type: CHRONIC
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: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|
| | 0731 | 0730 | 0730 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | | |
| | 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 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | | |
| | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 2 | 7 | 2 | 2 | 3 | 7 | | |
| | 1 | 0 | 0 | 1 | 9 | 5 | 0 | 9 | 1 | 0 | 1 | 4 | 0 | 9 | 0 | 1 | 2 | 9 | 5 | 9 | 3 | 9 | 9 | 0 | 1 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Retina, Atrophy | 2 | | | | | | | | | | | | 2 | | | | | | | | | | | | |
| Harderian Gland Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Inflammation | 1 | | | | | | | | | | | | | | | | | | | | | | | | |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Infarct Necrosis | | | | | | | | | | | | | | | 2 | | | | | | | | | | |
| Nephropathy | 1 | 1 | 2 | | 1 | 2 | 3 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | | | | | | | |
| Pelvis, Inflammation | 1 | | | | 1 | | 1 | | 2 | | | | 1 | | 1 | 1 | | | | | | | | | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| Urinary Bladder Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

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I .. Insufficient tissue
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BLANK .. Not examined microscopically

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

Experiment Number: 20523 - 03
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 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/Wistar Han

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 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|----------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | |
| 10 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 | 50 |
| ANIMAL ID | 0022 | 0022 | 0022 | 0022 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 0023 | 50 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-----|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Angiectasis | | | 1 | | | | | | | | | | | | | | | | | | | | | | 2 | 1.0 |
| Basophilic Focus | X | | X | | X | | | | X | | | | | | | | | | | | | | X | | 10 | |
| Clear Cell Focus | X | X | X | X | X | X | | X | X | X | | | X | | | | X | X | | X | X | | X | | 23 | |
| Hepatodiaphragmatic Nodule | | | | | X | | | | | | | | | X | | | | | | | | | | | 2 | |
| Infiltration Cellular, Lymphocyte | | | | | | | | | | | | | | 2 | | | | | | | | | | | 1 | 2.0 |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Mixed Cell Focus | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | 1 | | | 2 | 1.0 |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2.5 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | | | | | | | | | | 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--|
| | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | | |
| ANIMAL ID | 00226 | 00227 | 00228 | 00229 | 00230 | 00231 | 00232 | 00233 | 00234 | 00235 | 00236 | 00237 | 00238 | 00239 | 00240 | 00241 | 00242 | 00243 | 00244 | 00245 | 00246 | 00247 | 00248 | 00249 | | |
| Acinus, Atrophy | | | 2 | | | | | | | | | | | | | | | | | | | | 1 | | 2 1.5 | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Cardiomyopathy | | | | | | 1 | | | 1 | | | | 2 | 2 | 1 | | 2 | | 1 | | | | 1 | | 17 1.2 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Angiectasis | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 1.0 | |
| Hypertrophy | | | 2 | | | | 1 | | | 2 | 2 | | 1 | | | | | | 1 | | 4 | | | | 18 1.4 | |
| Vacuolization Cytoplasmic | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | 1 | 1 | | | | | | 1 | | | | | | 23 1.0 | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 44 | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------|----------|
| | 0730 | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | | |
| ANIMAL ID | 00226 | 00007 | 00008 | 00009 | 00010 | 00011 | 00012 | 00013 | 00014 | 00015 | 00016 | 00017 | 00018 | 00019 | 00020 | 00021 | 00022 | 00023 | 00024 | 00025 | 00026 | 00027 | 00028 | 50 | |
| Cyst
Pars Distalis, Hyperplasia | | | | | | | | 1 | | | 1 | | | | 1 | | 1 | 1 | | | 1 | | | 2 1.0
15 1.1 | |
| Thyroid Gland
C-cell, Hyperplasia
Follicle, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
39 1.6
7 2.0 | |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------------------|
| Epididymis
Granuloma Sperm | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 2.0 |
| Preputial Gland
Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
13 1.1 |
| Prostate
Atrophy
Fibrosis
Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 1.0
1 1.0
12 1.1 |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Testes
Edema
Germinal Epithelium, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
2 2.0
8 2.1 |

HEMATOPOIETIC 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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

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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|---------|--------|
| | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | | 0730 | 0731 |
| ANIMAL ID | 002226 | 00002 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node | + | + | | | | | | | | | | | | + | | | | | | | | | 7 |
| Axillary, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | 3 | | | | | | | | | 1 3.0 |
| Iliac, Hyperplasia, Plasma Cell | 3 | | | | | | | | | | | | | | | | | | | | | | 2 3.0 |
| Lumbar, Hyperplasia, Plasma Cell | | 1 | | | | | | | | | | | | 3 | | | | | | | | | 5 2.4 |
| Lymph Node, Bronchial | + | + | + | + | I | + | + | + | + | + | + | + | + | + | + | + | M | M | M | M | + | + | 43 |
| Hyperplasia, Lymphohistiocytic | 1 | 2 | | 2 | | | | | 1 | | 2 | 1 | 1 | | | 1 | | | | | | 1 | 17 1.4 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | 46 |
| Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | + | + | 1 3.0 |
| Lymph Node, Mediastinal | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Hyperplasia, Lymphohistiocytic | | | | | 1 | | 2 | | | 2 | 2 | 2 | | | | | | 2 | | 1 | | 1 | 20 1.5 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Hematopoietic Cell Proliferation | | | | | 1 | | | | | | | | | | 1 | 1 | | | | | | 1 | 9 1.0 |
| Hemorrhage | | | | | | | | | | | 3 | | | | | | | | | | | | 1 3.0 |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | 49 |
| Atrophy | | 2 | 2 | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | 3 | | | 3 | 3 | | 3 | 2 | | 1 2 2 2 | 36 2.1 |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | + | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | 5 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. 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:
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|----|
| | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | 0730 | 0731 | | |
| ANIMAL ID | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 0022 | 2 | |
| | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 14 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|---|--------|
| Cyst Epithelial Inclusion | X | | | | | | | | | | | | | | | | | | | | 2 | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | 1 2.0 | | |
| Ulcer | 2 | 2 | | | 2 | | | | | | | | | | | | | | | | 1 | 2 | 14 2.0 |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | 4 | | |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|----|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Compression | | | | | | | | | | | | | | | | | | | | | 3 | 6 2.3 | |
| Hydrocephalus | | | | | | | | | | | | | | | | | | | | | | 3 2.7 | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | 2 | | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | 2 | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|---|--------|--------|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Infiltration Cellular, Mixed Cell | | | | | 1 | | | | | 2 | | | | | 1 | | | | | 1 | 1 | | | 9 1.1 |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 1.0 |
| Epiglottis, Hyperplasia, Squamous | 1 | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | 1 | 2 | 1 | | | | | | 1 | 26 1.1 | |
| Epiglottis, Metaplasia, Squamous | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 50 1.4 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Fibrosis | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 43 1.0 | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
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 Metal working fluids (Trim VX)
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| WISTAR HAN RATS MALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|---|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|---|-----------|------------|
| | 0730 | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | | 0750 | | | |
| ANIMAL ID | 002226 | 002227 | 002228 | 002229 | 002230 | 002231 | 002232 | 002233 | 002234 | 002235 | 002236 | 002237 | 002238 | 002239 | 002240 | 002241 | 002242 | 002243 | 002244 | 002245 | 002246 | 002247 | | | |
| Infiltration Cellular, Histiocyte | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 50 | 1.4 |
| Inflammation, Chronic Active | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 46 | 1.0 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | | | | | 1 | 1 | 1 | | 1 | | 1 | | | | | 1 | 1 | 1 | | 1 | 1 | 22 | 1.0 |
| Alveolar Epithelium, Hyperplasia | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | | | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 43 | 1.3 |
| Alveolus, Proteinosis | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Mediastinum, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation, Suppurative | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 46 | 1.2 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | 2 | 1 | | 1 | | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 43 | 1.5 |
| Goblet Cell, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 1 | | | | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 36 | 1.0 |
| Goblet Cell, Nasolacrimal Duct, Metaplasia | | | | | | | | | | | | | | | 2 | | | | | | | | | 1 | 2.0 |
| Nasolacrimal Duct, Inflammation, Chronic | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | 1.0 |
| Nasolacrimal Duct, Metaplasia, Squamous | | | | | | | | | | | | | | | 2 | | | | | | | | | 1 | 2.0 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 50 | 2.8 |
| Olfactory Epithelium, Atrophy | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 1.0 |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 50 | 1.4 |
| Respiratory Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | 7 | 1.0 |
| Transitional Epithelium, Hyperplasia | | | | 1 | | | | | | | 1 | | | | | | | | 1 | 1 | | | | 7 | 1.0 |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | 1 | | | | | 2 | 1.0 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. 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

Experiment Number: 20523 - 03

Test Type: CHRONIC

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: 10/29/2014

Time Report Requested: 10:15:41

First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|-----------------------|
| | 0
7
3
0 | 0
7
3
1 | 0
7
3
0 | 0
7
3
1 | 0
7
3
0 | 0
7
2
9 | 0
7
2
9 | 0
7
3
0 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
2
9 | 0
7
2
9 | | | |
| 10 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
| | 0
0
2
2
6 | 0
0
2
2
7 | 0
0
2
2
8 | 0
0
2
2
9 | 0
0
2
3
0 | 0
0
2
3
1 | 0
0
2
3
2 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
3
3 | 0
0
2
4
0 | 0
0
2
4
1 | 0
0
2
4
2 | 0
0
2
4
3 | 0
0
2
4
4 | 0
0
2
4
4 | 0
0
2
4
4 | 0
0
2
4
4 | 0
0
2
4
4 | 0
0
2
4
5 | | 0
0
2
4
6 |
| Retina, Atrophy | | | | 2 | 2 | | | | | 2 | | | | | | | | | | | | | | | | 5 | 2.0 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Cyst | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Infarct | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| Necrosis | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Nephropathy | 1 | | 2 | 1 | | 1 | | 1 | | | 4 | | 1 | | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | | 1 | 31 | 1.3 | |
| Pelvis, Inflammation | | | 1 | 1 | 1 | | 2 | 1 | 1 | | | 2 | 1 | | | 1 | 1 | | | 1 | | | | | 17 | 1.2 | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|----------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|--------------------|
| | 054 | 066 | 077 | 077 | 066 | 077 | 055 | 077 | 077 | 044 | 077 | 077 | 055 | 077 | 077 | 077 | 077 | 066 | 077 | 077 | 066 | 077 | 077 | 066 | | |
| 30 mg/m3 | 054 | 066 | 077 | 077 | 066 | 077 | 055 | 077 | 077 | 044 | 077 | 077 | 055 | 077 | 077 | 077 | 066 | 077 | 077 | 066 | 077 | 077 | 066 | 077 | 077 | |
| | 004 | 004 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | |
| | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 00 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 00 | 11 | 22 | 22 | 22 | 22 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon
Lymphoid Tissue, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Basophilic Focus | | | X | | | | | | X | | | | | X | | | | X | | X | | X | | |
| Clear Cell Focus | | | | | | | | | X | | X | X | | X | X | | | | | | X | X | | |
| Fatty Change | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Mixed Cell Focus | | | | | | | | | | | | | | | | | | | | | | X | | |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | |
| Serosa, Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | |
| Mesentery | | | | | + | | | | | | | | | | | | | | | | | | | |
| Fat, Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | |
| Fat, Necrosis | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Male
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | males
(cont...) | |
|----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|------|
| | 054 | 066 | 073 | 072 | 064 | 073 | 053 | 073 | 073 | 047 | 077 | 057 | 077 | 077 | 077 | 077 | 067 | 077 | 077 | 067 | | 077 |
| ANIMAL ID | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 | 0040 | 0044 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pars Distalis, Hyperplasia | | | | | | | | | 2 | | | | | | 1 | | 1 | 2 | 1 | | 1 | |
| Pars Intermedia, Hyperplasia | | | | | | | | | | | | | | 1 | | | | | | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| C-cell, Hyperplasia | 2 | 1 | 1 | | 1 | | 2 | | 1 | 2 | 1 | 1 | | | 2 | | | 2 | 2 | | 3 | |
| Follicle, Hyperplasia | | | | | | | | | | | 1 | | | | | | | | | | | 1 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation | | | | 2 | | | | | 1 | | | 1 | 1 | | | | | | | 1 | 2 | |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation | 2 | 1 | | | | | | | | | 2 | | | | | | | 1 | | | | 2 |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Edema | | | | | | | | | | | | | | | | | | | | | | |
| Germinal Epithelium, Hypoplasia | | | | | | | | | | | 3 | | | | | | | | | | | |

* .. 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
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Experiment Number: 20523 - 03
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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
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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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 5 | 6 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 4 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 7 |
| | | 5 | 6 | 3 | 2 | 4 | 3 | 5 | 3 | 3 | 5 | 2 | 2 | 5 | 3 | 2 | 3 | 0 | 3 | 9 | 2 | 3 | 3 | 2 | 2 | 0 |
| | | 4 | 6 | 0 | 9 | 6 | 0 | 5 | 0 | 0 | 2 | 9 | 9 | 1 | 1 | 9 | 0 | 4 | 0 | 4 | 9 | 0 | 0 | 6 | 9 | 7 |
| 30 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 4 | 4 | 4 | 4 | 4 | 4 | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | |

males (cont...)

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node Iliac, Hyperplasia, Plasma Cell | | | | | | + | + | | | | | + | | | | | + | | | + | | | | |
| Lymph Node Lumbar, Hyperplasia, Plasma Cell | | | | | | | 3 | | | | | | 3 | | | | | 4 | | | | | 3 | |
| Lymph Node, Bronchial Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | + | + | + | + | M | + | + | I | + | + | + | + | + | + | + | + | + | M |
| | 1 | 1 | 1 | | 1 | 2 | 2 | 2 | | | 2 | 2 | 2 | | 3 | 1 | | 1 | 2 | 1 | 2 | 1 | | |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | M | + |
| Lymph Node, Mediastinal Hyperplasia, Lymphohistiocytic | | + | + | + | + | + | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + | + | + | M |
| | | 1 | | 2 | | 2 | 2 | | 3 | 2 | | 2 | | 2 | 1 | | 1 | | 1 | 2 | | | | |
| Lymph Node, Mesenteric Hemorrhage | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen Congestion | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen Hematopoietic Cell Proliferation | | | | | | 1 | | 1 | | | | | | 2 | | | | | 1 | | 1 | | | |
| Spleen Lymphoid Follicle, Atrophy | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | |
| Thymus Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Thymus Cyst | | 2 | | | 1 | 3 | | | 1 | 2 | | 2 | 2 | 1 | | | | 2 | 2 | | 2 | 1 | 3 | 2 |

INTEGUMENTARY 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
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Experiment Number: 20523 - 03
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 Species/Strain: RATS/Wistar Han

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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
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 Lab: BNW

| WISTAR HAN RATS MALE
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|-----------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|--------------------|
| | 054 | 066 | 073 | 072 | 064 | 073 | 053 | 073 | 073 | 047 | 077 | 075 | 077 | 077 | 077 | 077 | 066 | 077 | 077 | 066 | 077 | 067 | 077 | 077 | | |
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | + | M | M | M | | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Cyst Epithelial Inclusion | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Ulcer | 2 | | | | 2 | 2 | 2 | | | | | 2 | | | 2 | | | | | 2 | | 3 | | | 2 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Skeletal Muscle | | | | | + | | + | | | + | | | | | | | | | | + | | | | + | | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Compression | 3 | 4 | | | | | | | | | 4 | | | | | | | | | | | 4 | | | | |
| Hydrocephalus | 3 | 3 | | | | | | | | | 3 | | | | | | | | | | | 2 | 1 | | | |
| Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peripheral Nerve | | | | | + | | + | | | + | | | + | | | | | | | + | | | | | | |
| Axon, Degeneration | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spinal Cord | | | | | + | | + | | | + | | | | | | | | | | + | | | | | | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Mixed Cell | 1 | | 1 | 2 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | | |
| Epiglottis, Hyperplasia, Squamous | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
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 Metal working fluids (Trim VX)
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 Lab: BNW

| Wistar Han Rats Male
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | | |
|---|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|--------------------|-----|-----|---|
| | 054 | 066 | 073 | 072 | 064 | 073 | 053 | 073 | 073 | 047 | 077 | 077 | 055 | 077 | 077 | 077 | 077 | 066 | 077 | 077 | | | 067 | 077 | |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Fibrosis | 1 | 1 | 2 | 2 | 1 | 1 | | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | |
| Foreign Body | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Histiocyte | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| Inflammation, Chronic Active | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | | 2 | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | |
| Alveolus, Proteinosis | 1 | 1 | | | 1 | 1 | | 1 | 1 | | 2 | | 1 | | | | | 1 | | 2 | 2 | 1 | 1 | 1 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | 1 | | | | | | | | 2 | 1 | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Foreign Body | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Inflammation, Suppurative | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | | 1 | 1 | 2 | 1 | 1 | 2 | 1 | | 2 | 3 | 2 | 1 | 1 | 1 | 2 | |
| Goblet Cell, Hyperplasia | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | | | | 2 | 1 | 1 | | | | 2 |
| Goblet Cell, Olfactory Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 2 | 4 | 3 | 3 | 3 | 3 |
| Olfactory Epithelium, Atrophy | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 2 |
| Respiratory Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) | |
|----------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|-----|
| | 054 | 066 | 077 | 077 | 066 | 077 | 055 | 077 | 077 | 044 | 077 | 077 | 055 | 077 | 077 | 033 | 022 | 033 | 000 | 033 | 099 | 022 | 033 | 000 | 066 | | 077 |
| 30 mg/m3 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 |
| ANIMAL ID | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 |
| | 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 000 | 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 000 | 001 | 002 | 003 | 004 | 005 | 006 | 007 |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cyst | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infarct | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nephropathy | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pelvis, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Renal Tubule, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|----------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | |
| 30 mg/m3 | 0026 | 0027 | 0028 | 0029 | 0030 | 0031 | 0032 | 0033 | 0034 | 0035 | 0036 | 0037 | 0038 | 0039 | 0040 | 0041 | 0042 | 0043 | 0044 | 0045 | 0046 | 0047 | 0048 | 0049 | 0050 | |
| ANIMAL ID | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | |
| | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon
Lymphoid Tissue, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 2.0 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Basophilic Focus | X | X | | X | | | | X | X | X | | | | X | | | | X | X | X | | | X | | | 15 |
| Clear Cell Focus | X | X | X | | | | | X | X | | | | | X | | | | | X | X | X | | X | | | 17 |
| Fatty Change | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Mixed Cell Focus | | | | | | | | | | | | | | X | | | | | | | | | | | | 2 |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 2 1.5 |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 1.0 |
| Serosa, Fibrosis | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | + | 3 |
| Fat, Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 1.0 |
| Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
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|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|--|
| | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | | 0729 | |
| ANIMAL ID | 00426 | 00427 | 00428 | 00429 | 00430 | 00431 | 00432 | 00433 | 00434 | 00435 | 00436 | 00437 | 00438 | 00439 | 00440 | 00441 | 00442 | 00443 | 00444 | 00445 | 00446 | 00447 | 00448 | 00449 | 00450 | | |
| Acinus, Atrophy | | | | | | 2 | | | 1 | | | | | | | | | | | | | | | | 9 | | |
| Acinus, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cardiomyopathy | | | 1 | | | | | | | 1 | | 1 | | | | | | | 1 | 2 | | | 1 | 1 | 1 | | |
| Endocardium, Hyperplasia | | | 2 | | | | | | | | | | | | | | | | | | | | | | 22 | | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Angiectasis | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 | | |
| Hypertrophy | 2 | | | 1 | | | | | | | 1 | | 1 | | | | 1 | | | 1 | | | | 1 | | | |
| Thrombosis | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 | | |
| Vacuolization Cytoplasmic | 1 | 1 | | | 1 | | | | | | 1 | | X | | 1 | | 1 | | | | 1 | | | 1 | | | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | 46 | | |
| Hyperplasia | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 | | |

* .. 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
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|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--|
| | 079 | 079 | 064 | 079 | 073 | 072 | 072 | 072 | 071 | 079 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | 070 | | |
| ANIMAL ID | 00426 | 00442 | 00442 | 00442 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | 00444 | | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Cyst | | | | 1 | | 1 | | | | 2 | | | | | | | | | | | | | | | 4 1.3 | |
| Pars Distalis, Hyperplasia | | | | | | 1 | | | | | | 1 | | | | | | | | | | | | | 8 1.3 | |
| Pars Intermedia, Hyperplasia | | | 2 | | | | | | | | | | | | | | | | 1 | | | | | | 3 1.3 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | | | 1 | 2 | 1 | 1 | 1 | 2 | | 1 | | | 2 | 2 | 34 1.4 | |
| Follicle, Hyperplasia | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | 4 1.0 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | | | | | | | | 1 | | | | | | | | | | | 1 | 1 | 1 | 2 | 11 1.3 | |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | 2 | | | | | | 1 | | 2 | | | | | 1 | | | 1 | | | | | | 10 1.5 | |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | 2 | | | | | | | | | | | | | | | | | | | | | | 1 2.0 | |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Edema | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 2.0 | |
| Germinal Epithelium, Hypoplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
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Time Report Requested: 10:15:41

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 07/20/09 / 07/20/09

Species/Strain: RATS/Wistar Han

Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|----------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|---|--|
| | 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 | 6 | 7 | 7 | 7 | 2 | 7 | 7 | 6 | 7 | 2 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 3 | 3 | 2 | 7 | | 6 | |
| 30 mg/m3 | 2 | 2 | 4 | 2 | 3 | 2 | 2 | 2 | 3 | 5 | 2 | 7 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 6 | 3 | | |
| ANIMAL ID | 9 | 9 | 6 | 9 | 1 | 9 | 2 | 9 | 1 | 9 | 9 | 0 | 1 | 1 | 0 | 9 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | | |
| | 0 | 0 | 0 | 0 | 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 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | |
| | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | | |
| | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|-----|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Lymph Node | | | + | | | | | | | | | | | | | | + | | | | | | | 7 | | | |
| Iliac, Hyperplasia, Plasma Cell | | | 1 | | | | | | | | | | | | | | | | | | | | | | 4 | 3.0 | |
| Lumbar, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | 4 | | | | | | | | 3 | 3.3 | |
| Lymph Node, Bronchial | I | + | + | + | + | + | + | + | + | + | + | + | M | M | M | + | + | + | M | + | + | + | + | 42 | | | |
| Hyperplasia, Lymphohistiocytic | | 3 | | | 2 | 2 | | 2 | 2 | 1 | 3 | | 1 | | | | 1 | 2 | 3 | | | | 2 | | 29 | 1.8 | |
| Lymph Node, Mandibular | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 46 | | | |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | M | + | 44 | | | |
| Hyperplasia, Lymphohistiocytic | | | | | 2 | 2 | | | | | | | | | 2 | 2 | | 2 | 2 | | 2 | 2 | 3 | 2 | | 22 | 1.9 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Congestion | 2 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Hematopoietic Cell Proliferation | | | 1 | | | | | 1 | | | | | | | | | | 1 | | | | | | | 8 | 1.1 | |
| Lymphoid Follicle, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1.0 | |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Atrophy | | | 1 | | 1 | | | | | | 2 | | 1 | | 1 | | 4 | 1 | 1 | 2 | 2 | | | | 26 | 1.7 | |
| Cyst | | | | | | | | | | 2 | | | | | | | | | | | | | 1 | 2 | | 1 | 2.0 |

INTEGUMENTARY SYSTEM

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--------|
| | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | | 0729 |
| 30 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00426 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | 00442 | |
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | 1 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Ulcer | | | 2 | | 2 | | | | 2 | | | | | | | | | | 2 | | | | | | 13 2.1 |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Skeletal Muscle | | | + | | | | | | | + | | | | | | | | | | | | | | | 8 |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Compression | | | | | | | | | | | 4 | | | | | | 4 | | 2 | | | | | 4 | 8 3.6 |
| Hydrocephalus | | | | | | | | | | | 3 | | 3 | | | | | | | | | | | 2 | 8 2.5 |
| Necrosis | | | | | | | | | | | | | | | | | | | | | | 2 | | | 1 2.0 |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | | 8 |
| Axon, Degeneration | | | | | | | | | | | | 1 | | | | | | | | | | | | | 2 1.0 |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | | 7 |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Foreign Body | | | | X | | | | | | | | | | | | | | | | | | | | | 1 |
| Infiltration Cellular, Mixed Cell | | | | | | | 1 | 1 | | | | | | 1 | 1 | 1 | 1 | | 1 | | 1 | | | | 27 1.0 |
| Epiglottis, Hyperplasia, Squamous | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | | 3 | 2 | 2 | 2 | 1 | 1 | | 1 1 | 48 1.8 |

* .. 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | | | | | | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|------------|------------|------------|------------|
| | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | 0729 | | | 0729 | 0729 | | | | | | | | | | | | | |
| ANIMAL ID | 00426 | 00427 | 00428 | 00429 | 00430 | 00431 | 00432 | 00433 | 00434 | 00435 | 00436 | 00437 | 00438 | 00439 | 00440 | 00441 | 00442 | 00443 | 00444 | 00445 | 00446 | 00447 | 00448 | 00449 | 00450 | 00451 | 00452 | 00453 | 00454 | 00455 | 00456 | 00457 | 00458 | 00459 | 00460 | | | | | |
| Epiglottis, Metaplasia, Squamous | 1 | 2 | 3 | 1 | 2 | 2 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | | | | | | | | | | | 50 | 2.1 | | | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | | |
| Fibrosis | 1 | 1 | 1 | 2 | 2 | 1 | | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | | 1 | 1 | | | | | | | | | | | 45 | 1.4 | | | |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Infiltration Cellular, Histiocyte | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 2 | 2 | | | | | | | | | | | 50 | 2.0 | | | |
| Inflammation, Chronic Active | 2 | 2 | 2 | 2 | 2 | 2 | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | 2 | 2 | | | | | | | | | | | | 46 | 2.0 | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 2 | 1 | 1 | | 1 | 1 | 2 | | 1 | 2 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | | | | | | | | | | | 39 | 1.2 | | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 2 | 1 | | 3 | 2 | 2 | 2 | | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | | 1 | 1 | | | | | | | | | | | | 45 | 1.5 | | |
| Alveolus, Proteinosis | | 1 | | 1 | 2 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 2 | | | | | | | | | | | | | | | 31 | 1.2 | | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1.3 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Inflammation, Suppurative | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | | | | | | | | | | | | 47 | 1.3 | | |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 2 | | 2 | 1 | 2 | 1 | | | 2 | 2 | 1 | 2 | 2 | 2 | | 1 | 1 | | 1 | 2 | | 2 | 2 | | | | | | | | | | | | | 41 | 1.6 | | |
| Goblet Cell, Hyperplasia | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | 37 | 1.1 | |
| Goblet Cell, Olfactory Epithelium, Hyperplasia | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | | | | | | | | | | 50 | 2.9 | | |
| Olfactory Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 3 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | | | | | | | | | | | 48 | 1.4 | | |
| Respiratory Epithelium, Hyperplasia | | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 | 1.0 |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | 1 | | | | | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | 8 | 1.4 |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 3 | 1.0 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

* .. 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|----------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|
| | 07 | 07 | 06 | 07 | 07 | 07 | 02 | 07 | 07 | 06 | 07 | 02 | 07 | 07 | 07 | 05 | 07 | 07 | 07 | 07 | 02 | 07 | 02 | 07 | 06 | | 07 | 06 |
| 30 mg/m3 | 29 | 29 | 26 | 29 | 23 | 29 | 22 | 29 | 21 | 29 | 29 | 20 | 21 | 21 | 20 | 29 | 21 | 20 | 20 | 20 | 23 | 23 | 23 | 23 | 22 | 26 | 23 | 23 |
| ANIMAL ID | 00426 | 00427 | 00428 | 00429 | 00430 | 00431 | 00432 | 00433 | 00434 | 00435 | 00436 | 00437 | 00438 | 00439 | 00440 | 00441 | 00442 | 00443 | 00444 | 00445 | 00446 | 00447 | 00448 | 00449 | 00450 | 00451 | 00452 | 00453 |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Infarct | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Nephropathy | | | | | | | | | | | | | | | | | | | | | | | | | | | | 27 1.4 |
| Pelvis, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 1.2 |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Renal Tubule, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Hemorrhage | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 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

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Experiment Number: 20523 - 03
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| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|-------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Wistar Han Rats Male
100 mg/m3 | DAY ON TEST | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
3
0 | 0
7
3
1 | 0
7
2
9 | 0
7
3
0 | 0
7
9
1 | 0
7
3
0 | 0
7
9
5 | 0
7
6
3 | 0
7
7
9 | 0
7
7
1 | 0
7
3
0 | 0
7
7
9 | 0
7
3
1 | 0
7
7
0 | 0
5
3
5 | 0
6
2
6 | 0
7
3
1 | 0
7
2
9 | 0
7
7
3 | 0
7
2
9 | |
| | ANIMAL ID | 0
6
0
1 | 0
6
0
2 | 0
6
0
3 | 0
6
0
4 | 0
6
0
5 | 0
6
0
6 | 0
6
0
7 | 0
6
0
8 | 0
6
0
9 | 0
6
0
0 | 0
6
0
1 | 0
6
0
2 | 0
6
0
3 | 0
6
0
4 | 0
6
0
5 | 0
6
0
6 | 0
6
0
7 | 0
6
0
8 | 0
6
0
9 | 0
6
0
0 | 0
6
0
1 | 0
6
0
2 | 0
6
0
3 | 0
6
0
4 |
| | | males (cont...) | | | | | | | | | | | | | | | | | | | | | | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum
Inflammation
Lymphoid Tissue, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | | |
| Basophilic Focus | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clear Cell Focus | | X | X | | X | X | | X | | X | | X | X | X | X | | X | X | | X | | X | | X | |
| Eosinophilic Focus | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Fatty Change | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hepatodiaphragmatic Nodule
Inflammation, Granulomatous | | | | | | | | | | | | | X | | | | | | | | | | | 1 | |
| Mixed Cell Focus | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Dilatation | | | | | | | | | | | | | | | 4 | | | | | | | | | | 4 |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE

100 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | males
(cont...) | | | |
|---------------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--------------------|---|---|---|
| | 7 | 7 | 7 | 7 | 7 | 7 | 4 | 7 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 6 | 7 | | | 7 | 7 | |
| | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 9 | 3 | 9 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 0 | 0 | |
| | 0 | 9 | 0 | 0 | 1 | 9 | 0 | 1 | 0 | 5 | 3 | 9 | 1 | 0 | 9 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 5 | 6 | 7 | 7 | 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 |
| | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 5 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | | | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Cyst | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pars Distalis, Hyperplasia | 2 | | | | | | | | | 1 | | 1 | | | 1 | | | | 2 | 1 | | | | | | 2 | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| C-cell, Hyperplasia | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | | | | 1 | 1 | | | |
| Follicle, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Fibrosis | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | 1 | | 1 | 1 | 1 | | 1 | | | | 1 | | | | 1 | 2 | | | 2 | | | | | | | | |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Inflammation | 1 | | | | | 1 | | | | | | | | | | | 1 | | | | | | | 1 | | | | | |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |

* .. 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------------|------------------|
| WISTAR HAN RATS MALE

100 mg/m3 | DAY ON TEST | 0
7
3
0 | 0
7
2
9 | 0
7
3
0 | 0
7
3
0 | 0
7
3
1 | 0
7
2
9 | 0
7
3
0 | 0
7
9
1 | 0
7
3
0 | 0
4
9
5 | 0
7
6
3 | 0
6
9
1 | 0
7
7
2 | 0
7
3
3 | 0
7
3
3 | 0
7
7
3 | 0
7
7
3 | 0
5
3
5 | 0
6
2
6 | 0
7
3
1 | 0
7
2
9 | 0
7
3
0 | males
(cont...) | |
| | ANIMAL ID | 0
6
0
1 | 0
6
0
2 | 0
6
0
3 | 0
6
0
4 | 0
6
0
5 | 0
6
0
6 | 0
6
0
7 | 0
6
0
8 | 0
6
0
9 | 0
6
0
0 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
1 | 0
6
0
2 | 0
6
0
2 | 0
6
0
2 | | 0
6
0
3 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | | 2 |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Atrophy | 2 | | | | | 1 | 2 | 1 | 2 | 3 | 3 | | 2 | | | 1 | 2 | | | 2 | 1 | 2 | | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst Epithelial Inclusion | | | | | | | X | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | | | | 3 | | | | | | | | | | | 1 | | | | |
| Ulcer | 2 | | | 2 | | 2 | | | | 2 | 2 | | | | | | 2 | | | 2 | 2 | | 2 | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Hyperostosis | | | | | | | | | | | | | | | | | | | | | | | | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | + | | + |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Compression | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| Hydrocephalus | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | + | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | + | |

RESPIRATORY SYSTEM

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Male
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|------|------|---|
| | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | | | 0730 | 0730 | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Infiltration Cellular, Mixed Cell | 2 | | 1 | | 1 | | 1 | | 1 | 2 | | 2 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | | | |
| Epiglottis, Hyperplasia, Squamous | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Fibrosis | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| Infiltration Cellular, Histiocyte | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Inflammation, Chronic Active | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | 3 | 3 | 3 | 3 | 3 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 3 | 2 |
| Alveolar Epithelium, Hyperplasia | 2 | 2 | 1 | 4 | 1 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 |
| Alveolar Epithelium, Metaplasia, Squamous | | | | 1 | | | 1 | | | | | | 1 | | | | | | | | | | | | |
| Alveolus, Proteinosis | 2 | 2 | 3 | 3 | | 2 | 2 | | 2 | 2 | 3 | 2 | 2 | 3 | 4 | 3 | | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | 1 | | | | | | | | | | | 1 | | | | | | | | 1 | | | | | 1 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Foreign Body | | | | | X | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Suppurative | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Goblet Cell, Hyperplasia | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 2 | 2 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |
| Respiratory Epithelium, Hyperplasia | | | 1 | | | 1 | | | | | | | 1 | 1 | | | | | 1 | | | | 1 | 1 | 1 |
| Transitional Epithelium, Hyperplasia | 2 | | 1 | | 2 | | | | 1 | | | | | | | 2 | | 1 | 1 | | | | 1 | | 2 |
| Transitional Epithelium, Metaplasia, Squamous | | | 1 | | 1 | | | | | | | | | | | 1 | | | | | | | | | 1 |

* .. 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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1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
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Experiment Number: 20523 - 03
Test Type: CHRONIC
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: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|-------|-------|-------|
| | 0730 | 0727 | 0777 | 0777 | 0777 | 0777 | 0777 | 0747 | 0776 | 0766 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | | 0777 | 0777 | |
| 100 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | males
(cont...) | | | |
| 00601 | 00602 | 00603 | 00604 | 00605 | 00606 | 00607 | 00608 | 00609 | 00610 | 00611 | 00612 | 00613 | 00614 | 00615 | 00616 | 00617 | 00618 | 00619 | 00620 | 00621 | | 00622 | 00623 | 00624 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | 2 | | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Lacrimal Gland | | | | | | | | | | | | | | | | | | | | | | | | |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | | |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | | |
| Nephropathy | 1 | | 1 | | 1 | 1 | | | | 1 | | | 1 | 3 | 1 | | 2 | | | 1 | | | | |
| Pelvis, Inflammation | | | | | | | | | | | | | 2 | | | | | | | 1 | 2 | | | 2 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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
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Experiment Number: 20523 - 03
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 Route: RESPIRATORY EXPOSURE WHOLE BODY
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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Male
100 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * TOTALS | |
|-----------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|---|
| | ANIMAL ID | 7 | 7 | 7 | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 6 | 7 | 4 | 7 | 4 | 5 | 7 | 6 | 7 | 4 | 5 | 7 | | 7 |
| | | 3 | 3 | 2 | 4 | 3 | 3 | 8 | 1 | 3 | 2 | 2 | 3 | 0 | 2 | 5 | 6 | 3 | 2 | 2 | 5 | 3 | 2 | 3 | 6 |
| | | 0 | 0 | 9 | 0 | 1 | 0 | 1 | 6 | 0 | 1 | 9 | 6 | 1 | 9 | 9 | 8 | 0 | 7 | 9 | 9 | 6 | 9 | 0 | 7 |
| | | 0 | 0 | 0 | 0 | 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 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Inflammation | | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Lymphoid Tissue, Hyperplasia | | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Angiectasis | | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 4 1.0 |
| Basophilic Focus | | X | | | X | | X | | | | | | | X | | X | | X | | | | | | | 9 |
| Clear Cell Focus | | | | | | X | X | | | X | X | X | | X | | | X | X | | | | X | | | 23 |
| Eosinophilic Focus | | | | | | | | X | | | | | | | | | | | | | | | | | 2 |
| Fatty Change | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Hepatodiaphragmatic Nodule | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Inflammation, Granulomatous | | | | | | | | | 1 | | | | | | | | | | | | | | | | 2 1.0 |
| Mixed Cell Focus | | | | | X | | | | | | | | | | | | | | | | | | | | 1 |
| Bile Duct, Cyst | | | | | | | | | | 2 | | | | | | | | | | | | | | | 1 2.0 |
| Bile Duct, Dilatation | | | | | | | | | | | | | | | | | | | | | | | | | 2 4.0 |
| Bile Duct, 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|-----------------------------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| | 0730 | 0730 | 0729 | 0750 | 0771 | 0775 | 0757 | 0771 | 0777 | 0777 | 0766 | 0774 | 0774 | 0755 | 0776 | 0767 | 0774 | 0753 | 0772 | 0773 | | 0736 | 0737 |
| ANIMAL ID | 006266 | 006267 | 006268 | 006269 | 006270 | 006271 | 006272 | 006273 | 006274 | 006275 | 006276 | 006277 | 006278 | 006279 | 006280 | 006281 | 006282 | 006283 | 006284 | 006285 | 006286 | 006287 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Pars Distalis, Hyperplasia | | | | | | 2 | | | | | | 1 | | | | | | | | 1 | 2 | | 11 1.5 |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| C-cell, Hyperplasia | 2 | | | 2 | 1 | 1 | | 1 | 2 | 2 | 1 | 1 | 3 | 2 | | 1 | 2 | | 2 | 1 | 1 | 1 | 40 1.4 |
| Follicle, Hyperplasia | | | | | | | | | 1 | | | | | | | | | | | | | | 1 1.0 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Inflammation | 2 | 1 | 1 | | | 2 | | 1 | | | | 1 | | | | | | | | 2 | | | 16 1.3 |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Inflammation | 1 | | 1 | | | | | | | | | 1 | | | | | | 1 | | 1 | | 1 | 10 1.0 |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

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

+ .. Tissue examined microscopically

M .. Missing tissue

1-4 .. Lesion qualified as:

X .. Lesion present

A .. Autolysis precludes evaluation

1) Minimal 3) Moderate

I .. Insufficient tissue

BLANK .. Not examined microscopically

2) Mild 4) Marked

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|
| | 0700 | 0703 | 0709 | 0704 | 0703 | 0708 | 0701 | 0706 | 0701 | 0709 | 0706 | 0701 | 0704 | 0707 | 0704 | 0705 | 0703 | 0702 | 0709 | 0704 | | 0705 | 0707 | 0707 |
| ANIMAL ID | 00626 | 00667 | 00668 | 00669 | 00660 | 00661 | 00662 | 00663 | 00664 | 00665 | 00666 | 00667 | 00668 | 00669 | 00670 | 00671 | 00672 | 00673 | 00674 | 00675 | 00676 | 00677 | 00678 | 00679 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|---|-----|-----|
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Edema | | | | | | | | | | | | | | 4 | | | | | | | | | | | | 2 | 3.0 |
| Artery, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| Germinal Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 2.2 |
| Interstitial Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|--|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | |
| Iliac, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4.0 | |
| Lumbar, Hyperplasia, Lymphoid | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Lumbar, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 2.5 | |
| Renal, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2.5 | |
| Lymph Node, Bronchial | + | M | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | I | + | + | + | 42 | | | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | | | 35 | 1.9 | |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 | | |
| Lymph Node, Mediastinal | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 43 | | | |
| Congestion | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32 | 2.5 | |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3.0 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | 1.3 | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|
| | 0730 | 0730 | 0732 | 0734 | 0738 | 0739 | 0741 | 0743 | 0745 | 0747 | 0749 | 0751 | 0753 | 0755 | 0757 | 0759 | 0801 | 0803 | 0805 | 0807 | | 0809 |
| ANIMAL ID | 00626 | 00662 | 00662 | 00662 | 00663 | 00663 | 00663 | 00663 | 00663 | 00663 | 00666 | 00667 | 00668 | 00669 | 00670 | 00671 | 00672 | 00673 | 00674 | 00675 | 00676 | 00677 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| Thymus Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| | | | 2 | 2 | 1 | | 2 | | 2 | | | 2 | 2 | 2 | | | 4 | | 2 | 2 | | 1 | 26 1.9 |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| Mammary Gland | M | M | M | M | M | M | M | M | M | M | + | M | M | M | M | + | M | M | M | M | M | M | 2 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Inflammation | | | | 2 | | | | | | | | | | | | | | | 2 | | | | 4 2.0 |
| Ulcer | | | | | | | | | | | 2 | | | 2 | | 2 | | | | | 2 | | 13 2.0 |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Bone Hyperostosis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| | | | | | | | | | | | | | 1 | | | | | | | | | | 1 1.0 |
| Skeletal Muscle | | | | + | | | | | | | | | | | | | | | | | | | 3 |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Compression | | | | | | | 3 | | | | 1 | | 3 | | | | 4 | | | 4 | | 3 | 7 3.0 |
| Hydrocephalus | | | | | | | | | | | | | 2 | | | | | | | 2 | | 3 | 4 2.5 |
| Peripheral Nerve | | | | + | | | | | | | | | | | | | | | | | | | 2 |
| Spinal Cord | | | | + | | | | | | | | | | | | | | | | | | | 2 |

RESPIRATORY 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

Experiment Number: 20523 - 03

Test Type: CHRONIC

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: 10/29/2014

Time Report Requested: 10:15:41

First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| DAY ON TEST | 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 | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 6 | 7 | 4 | 7 | 4 | 5 | 7 | 6 | 7 | 4 | 5 | 7 | 7 |
| WISTAR HAN RATS MALE | 3 | 3 | 2 | 4 | 3 | 3 | 8 | 1 | 3 | 3 | 2 | 2 | 3 | 0 | 2 | 5 | 6 | 3 | 2 | 2 | 5 | 3 | 2 |
| | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 0 | 1 | 9 | 6 | 1 | 9 | 9 | 9 | 8 | 0 | 7 | 9 | 9 | 6 | 9 |
| 100 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 |
| | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| ANIMAL ID | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |
| | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Infiltration Cellular, Mixed Cell | 1 | 1 | | | 1 | 1 | | | 1 | | | 1 | | 1 | 1 | 1 | | | 1 | | 1 | 1 | 31 1.1 |
| Epiglottis, Hyperplasia, Squamous | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 50 2.4 |
| Epiglottis, Metaplasia, Squamous | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 50 2.6 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Fibrosis | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | | | 2 | 1 | 49 1.3 |
| Infiltration Cellular, Histiocyte | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 50 2.6 |
| Inflammation, Chronic Active | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | 3 | 3 | 3 | 3 | 3 | 48 3.0 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 2 | 2 | 1 | 2 | | 2 | 2 | 2 | 2 | 1 | 2 | | 2 | 1 | 3 | | | 2 | 1 | 1 | 46 1.8 |
| Alveolar Epithelium, Hyperplasia | 2 | 4 | 2 | 4 | 2 | 1 | | 1 | 1 | 1 | 2 | 3 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 3 | 49 2.1 |
| Alveolar Epithelium, Metaplasia, Squamous | | | | | | | | | | | | 1 | | | | | | 3 | | | | | 5 1.4 |
| Alveolus, Proteinosis | 1 | | 2 | 3 | 1 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 | 3 | 1 | | 2 | 2 | 2 | 45 2.2 |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | 1 | | 1 | | | | | | | | | | | | | | | | | 6 1.0 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Foreign Body | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Inflammation, Suppurative | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 46 1.1 |
| Glands, Olfactory Epithelium, Hyperplasia | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 2 | | 2 | 49 1.9 |
| Goblet Cell, Hyperplasia | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | | | 2 | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 42 1.2 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 50 3.2 |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 50 1.6 |
| Respiratory Epithelium, Hyperplasia | 1 | 1 | 2 | | 1 | 1 | | 1 | | | | 1 | 1 | | | | 1 | | | 1 | | | 19 1.1 |
| Transitional Epithelium, Hyperplasia | | | | | | 1 | | | | | | | | | 2 | | | | | | 2 | 1 | 13 1.5 |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | 1 | | | | | | 1 | | 6 1.0 |

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

+ .. Tissue examined microscopically

X .. Lesion present

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2) Mild 4) Marked

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

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 Lab: BNW

| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|--------|
| | 0730 | 0730 | 0732 | 0734 | 0733 | 0733 | 0738 | 0731 | 0736 | 0730 | 0731 | 0732 | 0732 | 0736 | 0734 | 0737 | 0736 | 0737 | 0734 | 0735 | | 0737 | 0737 |
| ANIMAL ID | 00626 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cataract | 2 | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Retina, Atrophy | 2 | | | 2 | | | | | | | | | | | | | | | | | | | 3 2.0 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Hyperplasia | | | | | | | | | | | | | | 1 | | | | | | | | | 1 1.0 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| Lacrimal Gland | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Hydronephrosis | | | 2 | | | | | 2 | | | | 2 | | | | | | | | | | | 3 2.0 |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Metaplasia, Lipocyte | | | | | 1 | | | | | | | | | | | | | | | | | | 1 1.0 |
| Nephropathy | 1 | 1 | | 1 | 2 | | 1 | 1 | 2 | 1 | 2 | 1 | | 1 | | 1 | 1 | 2 | 2 | | 2 | 1 | 28 1.3 |
| Pelvis, Inflammation | 1 | | | | 1 | | | | | | | | | | | 1 | | | 2 | | | 1 | 9 1.4 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

*** END OF MALE DATA ***

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 M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) | |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|------|
| | 0732 | 0615 | 0731 | 0733 | 0702 | 0533 | 0733 | 0733 | 0733 | 0733 | 0733 | 0654 | 0533 | 0733 | 0533 | 0533 | 0618 | 0733 | 0637 | 0733 | 0636 | 0733 | 0633 | 0733 | | 0733 |
| Control | 0010 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Basophilic Focus | | | X | X | | | | X | X | X | | | X | | X | X | X | X | X | | | | | X | |
| Clear Cell Focus | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Eosinophilic Focus | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Fatty Change | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mixed Cell Focus | | | | | X | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Centrilobular, Degeneration | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sinusoid, Dilatation | | | | | | | | | | | | | | | 2 | | | | | | | | | | |
| Mesentery | | | + | | | + | | | | | | | | | | | | | | | | | | | + |
| Fat, Necrosis | | | 1 | | | 2 | | | | | | | | | | | | | | | | | | | 3 |

* .. 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
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 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20523 - 03

Test Type: CHRONIC

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: 10/29/2014

Time Report Requested: 10:15:41

First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| Wistar Han Rats Female
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|
| | 0732 | 0665 | 0771 | 0773 | 0775 | 0777 | 0779 | 0781 | 0783 | 0785 | 0787 | 0789 | 0791 | 0793 | 0795 | 0797 | 0799 | 0801 | 0803 | 0805 | | | 0807 |
| Pancreas Hyperplasia Acinus, Atrophy | + | + | + | + | + | + | + | + | + | + | + | 2 | + | + | + | + | + | + | + | + | + | + | + |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach Inflammation Epithelium, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | 1 | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Heart Cardiomyopathy | + | + | + | + | 1 | 1 | + | + | + | + | + | + | + | + | + | 1 | + | + | + | + | + | + | + |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex Angiectasis Hematopoietic Cell Proliferation Hypertrophy Vacuolization Cytoplasmic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Adrenal Medulla Hyperplasia | 1 | 2 | 1 | 1 | | | | 1 | | 1 | 1 | | 1 | | | | 1 | | | 1 | 2 | | 1 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/Wistar Han

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 Metal working fluids (Trim VX)
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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|------------------|-----------------------|------------------|-------------|--|
| | 0
7
3
2 | 0
6
1
5 | 0
7
3
1 | 0
7
3
3 | 0
7
0
2 | 0
5
3
5 | 0
7
3
1 | 0
7
3
1 | 0
7
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1 | 0
7
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2 | 0
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4 | 0
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5 | 0
5
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7 | 0
6
1
8 | 0
7
3
7 | 0
6
9
8 | 0
7
0
3 | 0
6
0
6 | | | 0
7
3
3 | 0
7
3
3 | 0
7
3
2 | | |
| | 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
0
1 | | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parathyroid Gland
Hyperplasia | M | M | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | M | + | + | | |
| Pituitary Gland
Pars Distalis, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1 | |
| Thyroid Gland
C-cell, Hyperplasia
Follicle, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | I | + | + | + | + | + | + | + | 1
1
1 | |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Clitoral Gland
Fibrosis
Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1 | 1 | 1 | 1 | 1 | | |
| Ovary
Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1 | 1 | 2 | 2 | 4 | | |
| Uterus
Inflammation, Suppurative
Endometrium, Hyperplasia, Cystic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1 | 1 | 1 | 1 | 3 | 1 | |
| Vagina | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 + .. Tissue examined microscopically
 X .. Lesion present
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First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| DAY ON TEST | | 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 | | |
|------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS FEMALE | | 7 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 5 | 7 | 5 | 5 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| Control | | 3 | 1 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 8 | 4 | 1 | 3 | 9 | 0 | 3 | 0 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| ANIMAL ID | | 2 | 5 | 1 | 3 | 2 | 5 | 1 | 1 | 1 | 2 | 3 | 5 | 4 | 2 | 5 | 7 | 8 | 3 | 7 | 8 | 3 | 6 | 3 | 6 | 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 | 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 | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 | 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 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

females
(cont...)**HEMATOPOIETIC SYSTEM**

| | |
|-------------------------------------|---|
| Bone Marrow | + |
| Lymph Node | + + |
| Lumbar, Hyperplasia, Plasma Cell | 3 |
| Popliteal, Hyperplasia, Plasma Cell | |
| Renal, Hyperplasia, Plasma Cell | |
| Lymph Node, Bronchial | M + M + + + + + + + M + M + M M + + + + + + M + M + |
| Hematopoietic Cell Proliferation | |
| Hyperplasia, Lymphohistiocytic | |
| Hyperplasia, Plasma Cell | 2 1 |
| Lymph Node, Mandibular | + + + + M M + + + M + M + + + + + + + + + + M M |
| Hematopoietic Cell Proliferation | |
| Lymph Node, Mediastinal | + + + + + + + + + + + + + + + + M + M + + + + + |
| Hematopoietic Cell Proliferation | |
| Hyperplasia, Plasma Cell | 2 2 3 1 |
| Lymph Node, Mesenteric | + |
| Spleen | + |
| Hematopoietic Cell Proliferation | 1 1 2 1 2 1 1 |
| Lymphoid Follicle, Atrophy | 2 2 |
| Thymus | M + + + + + + + + + + + + + + + M + + + + + + |
| Atrophy | 1 2 2 2 4 2 |
| Ectopic Thyroid | 1 |

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

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| WISTAR HAN RATS FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|----------------------|
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4 | 0
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2 | 0
5
4
5 | 0
6
1
8 | 0
7
3
3 | 0
6
9
7 | 0
7
0
8 | 0
6
3
6 | 0
7
3
3 | 0
6
3
3 | 0
7
3
3 | 0
7
3
2 | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) | |
| Epiglottis, Hyperplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Histiocyte | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolus, Proteinosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) | |
| Inflammation, Suppurative | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Goblet Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Metaplasia, Respiratory | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
1 | females
(cont...) |

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| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------------|---|
| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females (cont...) | |
| | 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 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 5 | 7 | 5 | 5 | 6 | 7 | 6 | 7 | 7 | 6 | 7 | 7 | | 7 |
| Control | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | females (cont...) | |
| | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 |

Atrophy
 Inflammation 1

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Infarct | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Nephropathy | | | | | | 1 | | 1 | | | | 1 | | | | | | | | | 1 | | | | |
| Pelvis, Inflammation | | | | 2 | 2 | | | 2 | 1 | | 1 | | 1 | 2 | | | | | 1 | | 2 | 2 | 1 | 1 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0731 | 0733 | 0735 | 0733 | 0731 | 0736 | 0733 | 0733 | 0736 | 0738 | 0733 | 0732 | 0734 | 0736 | 0735 | 0737 | 0737 | 0737 | 0737 | 0736 | 0737 | 0735 | 0737 | 0737 | |
| Control | 00126 | 00017 | 00008 | 00009 | 00000 | 00001 | 00002 | 00003 | 00004 | 00005 | 00006 | 00007 | 00008 | 00009 | 00000 | 00001 | 00002 | 00003 | 00004 | 00005 | 00006 | 00007 | 00008 | 00009 | 00000 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Basophilic Focus | X | | | | X | | X | X | X | | | | | | | | X | | | | | | X | X | 21 |
| Clear Cell Focus | | X | | | | | X | X | | | | X | | | | | | | X | | | | | | 6 |
| Eosinophilic Focus | | | | | | | | | | | | | | | | | | X | | | | | | | 2 |
| Fatty Change | | | | | | | | | | 1 | | | | | | | | | | | | | | | 2 1.5 |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | 3 | | | | | | | | | | | 1 3.0 |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 1.0 |
| Mixed Cell Focus | | | | | | | | X | | | | | | | | | | | X | | | | | | 3 |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | 1 | | 2 1.0 |
| Centrilobular, Degeneration | | | | | | | | | | | | | | 2 | | | | | | | | | | | 1 2.0 |
| Sinusoid, Dilatation | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Mesentery | + | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| Fat, Necrosis | 2 | | | | | | | | | | | | | | | | | | | | | | | | 4 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----|-----|
| | 0731 | 0733 | 0735 | 0733 | 0731 | 0736 | 0733 | 0733 | 0736 | 0738 | 0733 | 0732 | 0734 | 0736 | 0735 | 0737 | 0737 | 0737 | 0737 | 0736 | 0737 | 0735 | 0737 | 0737 | | | |
| Control | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00126 | 00127 | 00128 | 00129 | 00130 | 00131 | 00132 | 00133 | 00134 | 00135 | 00136 | 00137 | 00138 | 00139 | 00140 | 00141 | 00142 | 00143 | 00144 | 00145 | 00146 | 00147 | 00148 | 00149 | 00150 | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Acinus, Atrophy | | | | | | | | | | | | | | 2 | | 1 | | | | | | | | 2 | 4 | 1.5 | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Inflammation | | | | | | | | | | | | | | | | | | 1 | | | | | | | 2 | 1.0 | |
| Epithelium, Hyperplasia | | | | | | | | | | | | | | 2 | | | | | | | | | | | 2 | 2.0 | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cardiomyopathy | | 1 | | | | 1 | | | | | | | | | 1 | | 1 | | | | | | | | 7 | 1.0 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Angiectasis | 1 | 3 | | | | 2 | 1 | | | | 1 | 1 | | 2 | 1 | 2 | 1 | 2 | 1 | | 1 | | 3 | 2 | 1 | 28 | 1.4 |
| Hematopoietic Cell Proliferation | | | 2 | | | | | | | | | | | | | | 2 | | | | | | | | 3 | 2.0 | |
| Hypertrophy | | | | | | | | | | 1 | | | 2 | 2 | | | | | 1 | | 1 | | 3 | 1 | 10 | 1.4 | |
| Vacuolization Cytoplasmic | | | | | | | | | 1 | 1 | | 2 | | | | | | 1 | | 1 | | | | | 9 | 1.3 | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Hyperplasia | | | | | | 1 | | | | | | | | | | | | | | | | | | | 3 | 1.0 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|-------|---|----|--------|--------|
| | 0731 | 0733 | 0735 | 0737 | 0771 | 0773 | 0777 | 0779 | 0783 | 0785 | 0786 | 0791 | 0793 | 0797 | 0799 | 0803 | 0805 | 0806 | 0807 | 0808 | | 0809 | | | | | |
| Control | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00126 | 00127 | 00128 | 00129 | 00130 | 00131 | 00132 | 00133 | 00134 | 00135 | 00136 | 00137 | 00138 | 00139 | 00140 | 00141 | 00142 | 00143 | 00144 | 00145 | 00146 | | | | | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | 4 | 1 4.0 | | | | |
| Parathyroid Gland Hyperplasia | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | M | + | + | + | M | + | 42 | 1 2.0 | |
| Pituitary Gland Pars Distalis, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 4 2.3 | |
| Thyroid Gland C-cell, Hyperplasia | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 2 | 2 | 1 | | 1 | 3 | 1 | 1 | | 1 | 2 | 49 | 40 1.4 |
| Follicle, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland Fibrosis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 2.0 | |
| Inflammation | | | 1 | 2 | | | | | | 1 | 1 | | | | | 2 | | | | 1 | | | | | | 11 1.2 | |
| Ovary Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 9 2.0 | |
| Uterus Inflammation, Suppurative | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 3.0 | |
| Endometrium, Hyperplasia, Cystic | | | 1 | | 1 | 2 | | | | | | | | | | 3 | | | | | | | | 2 | | 12 1.5 | |
| Vagina | | | | | | | | | | | | | | | | | | | | | | | | + | | 1 | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Female | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|
| | 0731 | 0733 | 0735 | 0733 | 0731 | 0736 | 0733 | 0733 | 0736 | 0738 | 0733 | 0732 | 0734 | 0736 | 0738 | 0732 | 0732 | 0733 | 0733 | 0737 | 0736 | 0737 | 0735 | 0737 | | 0737 | 0737 |
| Control | 0016 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0000 | 0000 | 50 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--------|
| Bone Marrow | + | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Lumbar, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 3 2.7 |
| Popliteal, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1 4.0 |
| Renal, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 1 3.0 |
| Lymph Node, Bronchial | + | | | | | | | | | | | | | | | | | | | | | | | | 37 | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 1 3.0 |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Lymph Node, Mandibular | M | | | | | | | | | | | | | | | | | | | | | | | | 40 | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1 2.0 |
| Lymph Node, Mediastinal | + | | | | | | | | | | | | | | | | | | | | | | | | 46 | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 1 3.0 |
| Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | | 5 2.2 |
| Lymph Node, Mesenteric | + | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Spleen | + | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 13 1.7 |
| Lymphoid Follicle, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 2.0 |
| Thymus | + | | | | | | | | | | | | | | | | | | | | | | | | 48 | |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 14 2.2 |
| Ectopic Thyroid | | | | | | | | | | | | | | | | | | | | | | | | | 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
|------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|---|
| DAY ON TEST | | 7 | 7 | 3 | 7 | 7 | 7 | 7 | 5 | 5 | 6 | 7 | 6 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | |
| WISTAR HAN RATS FEMALE | | 3 | 3 | 5 | 3 | 3 | 1 | 3 | 3 | 3 | 9 | 1 | 3 | 5 | 8 | 3 | 3 | 3 | 3 | 3 | 7 | 3 | 7 | 3 | 3 | |
| Control | | 1 | 3 | 2 | 3 | 1 | 6 | 3 | 3 | 6 | 8 | 3 | 2 | 4 | 6 | 2 | 2 | 2 | 3 | 3 | 4 | 3 | 6 | 2 | 3 | |
| | | 0 | 0 | 0 | 0 | 0 | 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 | 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 | 1 | 1 | 1 | 1 | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--|--|--------------|
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 1.7 |
| Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 2.0 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Ulcer | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 2.0 |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--|--|--------------|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Osteopetrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 4.0 |
| Joint, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--|--|---------------|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Compression | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17 2.8 |
| Degeneration | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Hydrocephalus | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 2.5 |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 |

RESPIRATORY 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

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 2) Mild 4) Marked

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|--|
| | 0
7
3
1 | 0
7
3
3 | 0
3
5
2 | 0
7
3
3 | 0
7
3
1 | 0
7
3
6 | 0
7
3
3 | 0
7
3
3 | 0
5
3
6 | 0
5
3
8 | 0
6
1
3 | 0
7
3
2 | 0
6
5
4 | 0
5
8
6 | 0
7
3
2 | 0
7
3
2 | 0
7
3
3 | 0
7
3
3 | 0
6
7
4 | 0
7
3
3 | 0
5
7
6 | 0
7
3
2 | 0
7
3
3 | 0
7
3
3 | | | |
| ANIMAL ID | 0
0
1
2
6 | 0
0
1
2
7 | 0
0
1
2
8 | 0
0
1
2
9 | 0
0
1
3
0 | 0
0
1
3
1 | 0
0
1
3
2 | 0
0
1
3
3 | 0
0
1
3
4 | 0
0
1
3
5 | 0
0
1
3
6 | 0
0
1
3
7 | 0
0
1
3
8 | 0
0
1
3
9 | 0
0
1
4
0 | 0
0
1
4
1 | 0
0
1
4
2 | 0
0
1
4
3 | 0
0
1
4
4 | 0
0
1
4
5 | 0
0
1
4
6 | 0
0
1
4
7 | 0
0
1
4
8 | 0
0
1
4
9 | 0
0
1
5
0 | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Epiglottis, Hyperplasia, Squamous | | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 1.0 | | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Fibrosis | | | | | | | | 1 | | | | | | | | | 1 | | | 1 | 1 | | | | 5 1.0 | | |
| Infiltration Cellular, Histiocyte | 1 | | | | | | | 1 | | | | | 1 | 1 | | | 1 | | 1 | 1 | | | 1 | | 16 1.1 | | |
| Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | 1 | 1 | | 1 | 1 | | | | 5 1.0 | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | 2 1.0 | | |
| Alveolar Epithelium, Hyperplasia | | | | | | | | 1 | | | | | | | | | 1 | 1 | 2 | 1 | | | 1 | | 8 1.3 | | |
| Alveolus, Proteinosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Inflammation, Suppurative | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 1.0 | | |
| Goblet Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3 1.0 | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | 2 | 1 | | | | | | | 1 | | | 2 | | 14 1.2 | | |
| Olfactory Epithelium, Metaplasia, Respiratory | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | | | | | | | | | | 1 | | 5 1.2 | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | 1 | 2 | | | | | 5 1.2 | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 1.0 | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | 2 | 3 2.3 | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------|----------|
| | 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 | |
| Control | 7 | 7 | 3 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 6 | 7 | 6 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | |
| | 3 | 3 | 5 | 3 | 3 | 1 | 3 | 3 | 3 | 9 | 1 | 3 | 5 | 8 | 3 | 3 | 3 | 3 | 3 | 7 | 3 | 7 | 3 | 3 | 3 | |
| | 1 | 3 | 2 | 3 | 1 | 6 | 3 | 3 | 6 | 8 | 3 | 2 | 4 | 6 | 2 | 2 | 2 | 3 | 3 | 4 | 3 | 6 | 2 | 2 | 3 | |
| | 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 | 0 | 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 | 1 | 1 | 1 | 1 | 1 | |
| 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |

Atrophy
 Inflammation

1 1.0
1 1.0

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Infarct | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Nephropathy | | | | | | | | | | | | | | | | | | | | | | | | | 4 1.0 |
| Pelvis, Inflammation | 1 | 1 | | | 2 | 1 | 1 | 1 | 1 | | | | 1 | | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | 28 1.3 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

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 + .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Female
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0732 | 0734 | 0731 | 0736 | 0737 | 0736 | 0737 | 0737 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | 0737 | | | 0735 | 0734 |
| | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3 | 3 | 3 | 3 | 3 | 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 | 0 | 0 | 0 | 0 | 0 |
| | 3 | 3 | 3 | 3 | 3 | 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 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis | | | | | | | | | | | | 1 | | | | | | | 1 | | 1 | | |
| Basophilic Focus | X | X | X | | X | X | | | X | X | X | | X | X | X | X | X | X | X | | | | |
| Clear Cell Focus | | X | | | | | | | | | | X | | X | | | | X | X | X | | | |
| Eosinophilic Focus | | | | | | | | | | | | X | | | | | | | | | X | | |
| Fibrosis | | | | | | | | 1 | | | | | | | | | | | | | | | |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Mixed Cell Focus | | | | | | | | | | | | | | | | | | | | | X | | |
| Bile Duct, Dilatation | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | | | | | 1 | | | | 1 | | | | | | | | 1 | | | |
| Mesentery | | | | + | | | | | | | + | | | | | | | | | | | + | |
| Fat, Necrosis | | | | 2 | | | | | | | 1 | | | | | | | | | | | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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:
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE

10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|
| | 0733 | 0732 | 0771 | 0735 | 0773 | 0771 | 0716 | 0776 | 0777 | 0766 | 0777 | 0776 | 0777 | 0766 | 0776 | 0777 | 0776 | 0777 | 0776 | 0777 | 0776 | 0777 | 0776 | 0777 | 0776 | | |
| Acinus, Atrophy | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Salivary Glands
Sublingual Gland, Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Heart
Cardiomyopathy | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | | 1 | | | | | | | | | | | | | 1 | | | 1 | 1 | | 1 | | | | | | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Angiectasis
Hyperplasia
Hypertrophy
Vacuolization Cytoplasmic
Zona Fasciculata, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | 1 | | 1 | | 1 | | | 2 | 1 | | 3 | | | 2 | | 1 | | 2 | | | | | | | | 2 | |
| | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | 1 | |
| Adrenal Medulla
Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Parathyroid Gland | + | + | + | M | + | + | M | + | + | + | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | |
|----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0733 | 0734 | 0739 | 0733 | 0731 | 0734 | 0733 | 0731 | 0732 | 0733 | 0730 | 0733 | 0732 | 0734 | 0731 | 0733 | 0733 | 0731 | 0735 | | | 0734 | 0739 | 0735 |
| 10 mg/m3 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pars Distalis, Hyperplasia | | | | 2 | | | | 2 | | | | | | | | | | | | | | | | | | | | 3 | |
| Pars Intermedia, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| C-cell, Hyperplasia | 1 | 2 | 2 | 1 | 2 | 1 | | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | | | | | | | 1 | |
| Follicle, Hyperplasia | | | | | | 1 | | | | | | | | 1 | | | 2 | | | | | | | | | | | 1 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cervix, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Endometrium, Hyperplasia, Cystic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

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Experiment Number: 20523 - 03
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 Species/Strain: RATS/Wistar Han

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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Female
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|------------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|---|
| | 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 | 3 | 7 | 7 | 1 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 7 | 7 | 5 | 4 | 5 | 0 | | |
| | 3 | 3 | 3 | 5 | 3 | 3 | 0 | 4 | 3 | 3 | 7 | 1 | 3 | 3 | 0 | 3 | 5 | 3 | 3 | 3 | 3 | 3 | 8 | 9 | 9 | 0 | | |
| | 3 | 2 | 1 | 4 | 2 | 3 | 4 | 9 | 3 | 1 | 4 | 3 | 1 | 2 | 3 | 2 | 4 | 1 | 3 | 5 | 1 | 1 | 1 | 6 | 2 | 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 | 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 | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 0 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 0 | | |

Lymph Node

Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic

Lymph Node, Mandibular

Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic

Lymph Node, Mesenteric

Spleen
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy

Thymus
Atrophy
Cyst

INTEGUMENTARY SYSTEM

Mammary Gland
Duct, Cyst

Skin
Inflammation

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

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 Lab: BNW

| Wistar Han Rats Female
10 mg/m3 | Day on Test | | | | | | | | | | | | | | | | | | | | Animals
females
(cont...) | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|------|------|---|
| | 0733 | 0732 | 0771 | 0735 | 0773 | 0771 | 0716 | 0767 | 0777 | 0766 | 0777 | 0777 | 0777 | 0766 | 0777 | 0766 | 0777 | 0777 | 0777 | 0757 | | 0744 | 0755 | |
| ANIMAL ID | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | | |
| | 12 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |

Bone +

Skeletal Muscle +

NERVOUS SYSTEM

Brain +
 Compression 3 2 3 4 3 3 4 3
 Hydrocephalus 2 3 2 3 2

Peripheral Nerve +

Spinal Cord +

RESPIRATORY SYSTEM

Larynx +
 Infiltration Cellular, Mixed Cell 1 1 1 1
 Inflammation, Chronic Active 2 1
 Epiglottis, Hyperplasia, Squamous 1 2 2 1 3 2 1 2 2 2 1 2 2 2 1 2 2
 Epiglottis, Metaplasia, Squamous 1 2 1 1 2 2 3 2 2 2 1 2 1 1 2 1 1 2 2 2 2 1 1 1

Lung +
 Fibrosis 1
 Infiltration Cellular, Histiocyte 1 1 1 1 1 2 1 1 2 1 1 1 2 2 2 2 1 1 1 1 1 1 2
 Inflammation, Chronic Active 1
 Alveolar/bronchiolar Epithelium, Hyperplasia 1 1 2 1 1
 Alveolar Epithelium, Hyperplasia 1 1 1 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1 1 1
 Alveolar Epithelium, Metaplasia, Squamous 1 1
 Alveolus, Proteinosis 1 1 1 1 1 1

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | | |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0733 | 0734 | 0736 | 0737 | 0737 | 0736 | 0737 | 0737 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | 0737 | | | 0735 | 0734 | 0735 | 0739 |
| 10 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | |

Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic

1

Nose

Inflammation, Suppurative
 Glands, Olfactory Epithelium, Hyperplasia
 Goblet Cell, Hyperplasia
 Olfactory Epithelium, Accumulation, Hyaline Droplet
 Respiratory Epithelium, Accumulation, Hyaline Droplet
 Respiratory Epithelium, Hyperplasia
 Transitional Epithelium, Hyperplasia
 Transitional Epithelium, Metaplasia, Squamous

+
 1 2 2 1 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 1
 1 1 2 1 2
 1 1 2 1
 3 3 3 2 3 3 1 2 3 2 3 2 3 2 3 3 3 3 3 2 3 2 3 3
 1 2 2 1 1 1 1 2 2 1 1 1 2 1 1 2 1 2 2 1 2 2 2 1 1
 1
 1
 1

Trachea

+ +

SPECIAL SENSES SYSTEM

Eye

Retina, Atrophy

+
 2

Harderian Gland

Inflammation

+
 1 1

Zymbal's Gland

+

URINARY SYSTEM

Kidney

Hydronephrosis

Infarct

+
 2 2

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| | 0733 | 0633 | 0638 | 0733 | 0636 | 0733 | 0733 | 0733 | 0733 | 0573 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0573 | 0733 | 0733 | | |
| 10 mg/m3 | 0026 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | |
| Acinus, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| Salivary Glands
Sublingual Gland, Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 2.0 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Heart
Cardiomyopathy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
7 1.0 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Angiectasis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
25 1.4 |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Hypertrophy | | | | | | | | | | | | | | | | | | | | | | | | | 5 1.6 |
| Vacuolization Cytoplasmic | | | | | | | | | | | | | | | | | | | | | | | | | 8 1.4 |
| Zona Fasciculata, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Adrenal Medulla
Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 1.0 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | M | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | 43 |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | | | |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|----|-----|-----|-----|-----|
| | 0733 | 0635 | 0638 | 0732 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | | 0733 | 0733 | | | | | | | |
| ANIMAL ID | 00326 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356 | 00357 | 00358 | 00359 | 00360 | | | | | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1.5 | | | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | | |
| Pars Distalis, Hyperplasia | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | | | 13 | 1.7 | | |
| Pars Intermedia, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | | |
| C-cell, Hyperplasia | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | | | | | | | | | | | | | | | | | | | 44 | 1.8 | |
| Follicle, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1.8 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 | | |
| Inflammation | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 12 | 1.3 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | 1.4 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cervix, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Endometrium, Hyperplasia, Cystic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 11 | 1.5 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-----------------|----------------|
| | 0733 | 0633 | 0638 | 0732 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | | 0733 | 0733 | | | |
| ANIMAL ID | 00326 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356 | 00357 | 00358 | 00359 | 00360 | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic | + | M | + | + | + | + | M | + | + | + | M | + | + | + | + | I | + | I | I | + | + | + | I | + | 37 | 18 1.3 |
| Lymph Node, Mandibular | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | M | + | 46 | |
| Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | 11 1.3 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Spleen
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 7 1.3
2 1.0 |
| Thymus
Atrophy
Cyst | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | 49 | 12 2.3
1 1.0 | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-------|
| Mammary Gland
Duct, Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 7 1.1 |
| Skin
Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 1.0 |

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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|----------|
| | 0733 | 0633 | 0638 | 0733 | 0636 | 0733 | 0733 | 0733 | 0733 | 0539 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0537 | 0733 | 0733 | 0733 | | |
| 10 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00326 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356 | 00357 | 00358 | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Skeletal Muscle | | + | + | | | | | | | | | | | | | | | | | | | | | 3 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Compression | 2 | 4 | 4 | | 3 | | | 3 | | 4 | | 4 | | | | | | | | | 4 | | | 16 3.4 | |
| Hydrocephalus | | | 2 | | 2 | | | | | | 2 | | | | | | | | | | 3 | | | 9 2.3 | |
| Peripheral Nerve | | + | + | | | | | | | | | | | | | | | | | | | | | 3 | |
| Spinal Cord | | + | + | | | | | | | | | | | | | | | | | | | | | 3 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Infiltration Cellular, Mixed Cell | | | | 1 | | | | 1 | | 1 | 1 | | 1 | | | | | | | | | | | 9 1.0 | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | | | | | | | | 2 1.5 | |
| Epiglottis, Hyperplasia, Squamous | | | | 2 | | 2 | 1 | | 1 | | | | 2 | 1 | | | 1 | 2 | | 1 | 1 | | 1 | 24 1.6 | |
| Epiglottis, Metaplasia, Squamous | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | 1 | 49 1.4 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Fibrosis | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | 2 | | 1 | 1 | 1 | | 1 | 1 | | 2 | 1 | 1 | | 35 1.1 | |
| Infiltration Cellular, Histiocyte | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 48 1.3 | |
| Inflammation, Chronic Active | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 46 1.0 | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | 1 | | 1 | | | | | | | | | | | | | 9 1.1 | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 43 1.1 | |
| Alveolar Epithelium, Metaplasia, Squamous | | | | | | | | | | | 2 | | | | | | | | | | | | | 3 1.3 | |
| Alveolus, Proteinosis | | 1 | | 1 | | | 1 | | 1 | | 1 | | | 1 | | 1 | | 1 | | | | | | 15 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|--------|--|
| | 0733 | 0633 | 0638 | 0732 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | 0733 | | 0733 | 0733 | | | |
| ANIMAL ID | 00326 | 00327 | 00328 | 00329 | 00330 | 00331 | 00332 | 00333 | 00334 | 00335 | 00336 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation, Suppurative | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | | | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 46 1.2 | |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | | | 1 | 1 | | 1 | 1 | 2 | | | | 1 | 1 | | | 2 | 1 | 1 | | 1 | 1 | 1 | 32 1.1 | |
| Goblet Cell, Hyperplasia | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 36 1.0 | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 50 2.8 | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 50 1.5 | |
| Respiratory Epithelium, Hyperplasia | | 1 | | | 1 | | | | | | | | 1 | | | | 1 | | | | | | | | 7 1.0 | |
| Transitional Epithelium, Hyperplasia | | | | | 1 | | 1 | 2 | | | 1 | | | | | | | 1 | 1 | | | | | | 11 1.1 | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | 1 | 2 | | | 1 | | | | | | | | 1 | | | | | | 5 1.2 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Retina, Atrophy | | | | | | | | | | | | | 2 | | | | | | | | | | | | 2 2.0 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | 1 | | | | 3 1.0 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | | 2 2.0 | |
| Infarct | | | | | 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|-------|----------|
| | 0733 | 0663 | 0663 | 0763 | 0763 | 0773 | 0773 | 0773 | 0773 | 0573 | 0734 | 0734 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0573 | 0773 | 0773 | | | |
| 10 mg/m3 | 0026 | 0027 | 0028 | 0029 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0010 | 0011 | 0012 | 0013 | 0014 | 0015 | 0016 | 0017 | 0018 | 0019 | 0020 | | |
| ANIMAL ID | 0032 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | 0033 | | |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 | |
| Nephropathy | | | | | | | | 1 | | | | | | | | | | | | | | | | | 5 1.4 | |
| Pelvis, Inflammation | 2 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 2 | 1 | 1 | | | 1 | 1 | 1 | 1 | | 2 | 32 1.2 | | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 | |
| Renal Tubule, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|
| | 0604 | 0732 | 0684 | 0664 | 0666 | 0571 | 0757 | 0755 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | | | 0777 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005001 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005002 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005003 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005004 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005005 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005006 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005007 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005008 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005009 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005010 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005011 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005012 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005013 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005014 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005015 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005016 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005017 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005018 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005019 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005020 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005021 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005022 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005023 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005024 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0005025 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis | | | | | | | | | | | | | | | 1 | | | | | | | | |
| Basophilic Focus | | X | | X | | | X | X | X | X | | | X | X | X | X | | X | | X | X | | |
| Clear Cell Focus | | X | | | | | | | | | | | | | | X | | X | | | | | |
| Fatty Change | | | 3 | | | | | | | | | | | | | | 2 | | | | | | |
| Hepatodiaphragmatic Nodule | | | | | X | | | | | | | | | | | | | | | | | | |
| Necrosis | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Bile Duct, Dilatation | | | | | 3 | | | | | | | | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | 1 | | | | | | | | | | | 1 | | | | | | | | 1 |
| Mesentery | | | | | | | | | + | | | | | + | + | | | | + | | | | |
| Fat, Necrosis | | | | | | | | | | | | | | 2 | 2 | | | | | 1 | | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------|----------------------|
| | 0
6
0
4 | 0
7
3
2 | 0
6
8
4 | 0
6
4
6 | 0
6
2
6 | 0
5
1
3 | 0
7
3
9 | 0
5
7
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
6
8
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | | | | |
| 30 mg/m3 | 0
0
5
0
1 | 0
0
5
0
2 | 0
0
5
0
3 | 0
0
5
0
4 | 0
0
5
0
5 | 0
0
5
0
6 | 0
0
5
0
7 | 0
0
5
0
8 | 0
0
5
0
9 | 0
0
5
0
0 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
1
1 | 0
0
5
2
0 | 0
0
5
2
1 | 0
0
5
2
2 | 0
0
5
2
2 | 0
0
5
2
3 | 0
0
5
2
4 | 0
0
5
2
5 | | |

Acinus, Atrophy

Salivary Glands

Stomach, Forestomach

Stomach, Glandular

CARDIOVASCULAR SYSTEM

Blood Vessel

Heart
 Cardiomyopathy

ENDOCRINE SYSTEM

Adrenal Cortex
 Angiectasis
 Hypertrophy
 Necrosis
 Vacuolization Cytoplasmic

Adrenal Medulla

Islets, Pancreatic

Parathyroid Gland
 Fibrosis

Pituitary Gland

* .. 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

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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Female
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------|
| | 0604 | 0732 | 0684 | 0664 | 0666 | 0571 | 0757 | 0575 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0678 | 0773 | 0773 | 0773 | 0773 | | |
| ANIMAL ID | 00501 | 00502 | 00503 | 00504 | 00505 | 00506 | 00507 | 00508 | 00509 | 00510 | 00511 | 00512 | 00513 | 00514 | 00515 | 00516 | 00517 | 00518 | 00519 | 00520 | 00521 | 00522 | 00523 | 00524 | 00525 | |
| Pars Distalis, Hyperplasia | | | | | | | | | | | | 2 | | | 2 | | | | | 1 | | | | 2 | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| C-cell, Hyperplasia | 1 | 1 | 2 | 1 | 1 | | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | | 1 | 2 | 1 | 2 | |
| Follicle, Hyperplasia | | | | | | | | | | | 1 | 1 | | | | | | | | 2 | | | | 1 | | |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland Inflammation | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | 1 | | | 1 | 1 | | | | | | | | | | | | | 2 | 1 | 1 | 1 | |
| Ovary Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | 1 | | | 1 | | | | | | 2 | | | 1 | | 2 | | | | | | | | 2 | 1 |
| Uterus Endometrium, Hyperplasia, Cystic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | 1 | | | | 1 | | | | 3 | | | 1 | | | | | | | | 1 | | 2 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Bronchial Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | + | M | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + |
| | 1 | 2 | 2 | 2 | 1 | | 2 | | 2 | | | | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | | 1 |
| Lymph Node, Mandibular | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
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Date Report Requested: 10/29/2014

Test Type: CHRONIC

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Time Report Requested: 10:15:41

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 07/20/09 / 07/20/09

Species/Strain: RATS/Wistar Han

Lab: BNW

| WISTAR HAN RATS FEMALE

30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|----------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 6 | 7 | 6 | 6 | 6 | 5 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | | |
| | 0 | 3 | 8 | 4 | 2 | 1 | 3 | 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | | |
| | 4 | 2 | 4 | 6 | 6 | 6 | 3 | 0 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 2 | 2 | 3 | | |
| | 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 | 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 | 5 | 5 | 5 | 5 | 5 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | | |
| Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | | | |
| | | | 3 | | | | | | | | | | | | | 2 | | 2 | 2 | 1 | 2 | | | | |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Spleen
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | 1 | | | 1 | 1 | | | 2 | | | 1 | | | | | | | | | | | | | | |
| | | | 1 | | | 1 | | | | | | | | | | | | | 1 | | | | | | |
| Thymus
Atrophy
Cyst
Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | | | 2 | | | | | | 2 | | 1 | 1 | 1 | | 4 | 2 | 1 | | 2 | 2 | 1 | 4 | | | |
| | | | | | | | | | | 2 | | | | | | | | | | | 2 | | | | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland
Hyperplasia
Duct, Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | | | | | | | | | | | | 2 | | | | | | | 1 | | | | | | |
| | 2 | | | | | 2 | | | | | | | | | | | | | | | | | | | |
| Skin
Cyst Epithelial Inclusion
Inflammation
Ulcer | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 2 | | | | | | | 3 | | | | | | | | | | | | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|
| | 0
6
0
4 | 0
7
3
2 | 0
6
8
4 | 0
6
4
6 | 0
6
2
6 | 0
5
1
3 | 0
7
3
0 | 0
5
9
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
6
8
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | | | |
| 30 mg/m3 | 0
5
0
1 | 0
0
5
2 | 0
0
5
3 | 0
0
5
4 | 0
0
5
5 | 0
0
5
6 | 0
0
5
7 | 0
0
5
8 | 0
0
5
9 | 0
0
5
0 | 0
0
5
1 | 0
0
5
2 | 0
0
5
3 | 0
0
5
4 | 0
0
5
5 | 0
0
5
6 | 0
0
5
7 | 0
0
5
8 | 0
0
5
9 | 0
0
5
0 | 0
0
5
1 | 0
0
5
2 | 0
0
5
3 | 0
0
5
4 | 0
0
5
5 | | |

Skeletal Muscle + +

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Compression | | | | 4 | 2 | 3 | | | 3 | | | 1 | 3 | | | | | | 2 | 4 | | | 1 | | |
| Hydrocephalus | | | | 4 | | | | | | | | | | | | | | | 3 | | | | | | |
| Peripheral Nerve | | | | | + | | | | + | | | | | | | | | | | | | | | | |
| Spinal Cord | | | | | | + | | | | | | | | | | | | | | | | | | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Infiltration Cellular, Mixed Cell | | | | 1 | 1 | 1 | | 1 | | | | | 1 | | | | | | | | | 1 | 1 | 1 | |
| Epiglottis, Hyperplasia, Squamous | 1 | 1 | 3 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | | 1 | 2 | 1 | 1 | 1 | 1 | |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Fibrosis | 1 | 1 | 2 | 1 | 1 | | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | |
| Infiltration Cellular, Histiocyte | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | |
| Inflammation, Chronic Active | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | 2 | | 1 | | 2 | 1 | | 2 | 1 | 3 | 1 | | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | |
| Alveolar Epithelium, Hyperplasia | 2 | 1 | 2 | 2 | 2 | | 2 | 3 | 2 | 3 | 2 | 2 | 1 | 1 | 4 | 2 | 1 | 1 | 3 | 1 | 2 | 2 | 2 | 4 | |
| Alveolar Epithelium, Metaplasia, Squamous | 1 | 1 | | | | | | | | | | 1 | | | | | | | 1 | | | | 1 | 1 | |
| Alveolus, Proteinosis | 1 | 1 | 2 | 1 | 2 | | 2 | 1 | | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 2 | 1 | 1 | 1 | 2 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | 1 | | | | | | | | | | 1 | | | | 1 | | | 1 | | | | |
| Nose | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. 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
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---|------------------|----------------------|
| | 0
6
0
4 | 0
7
3
2 | 0
6
8
4 | 0
6
4
6 | 0
6
2
6 | 0
5
1
3 | 0
7
3
0 | 0
5
9
3 | 0
7
3
3 | 0
7
7
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
6
8
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | 0
7
3
3 | | | |
| Inflammation, Suppurative | 2 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0
5
0
1 | 2 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0
5
0
1 | 2 |
| Glands, Olfactory Epithelium, Hyperplasia, Squamous | | | | | | | | | | | 1 | | | | | | | | | | | | | | 0
5
0
1 | 2 |
| Goblet Cell, Hyperplasia | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 2 | 0
5
0
1 | 2 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 3 | | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 0
5
0
1 | 2 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 1 | 2 | 1 | 1 | | 2 | 1 | 1 | | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 2 | 1 | 1 | 0
5
0
1 | 2 |
| Respiratory Epithelium, Hyperplasia | | | | | 1 | | | 1 | 1 | | | | | | | | | 1 | | | | | | | 0
5
0
1 | 2 |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 0
5
0
1 | 2 |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | 0
5
0
1 | 2 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
5
0
1 | 2 |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
5
0
1 | 2 |
| Cataract | | | | | | | | | | | | | | | | | | 3 | | | | | | | 0
5
0
1 | 2 |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | 2 | | | | | | | 0
5
0
1 | 2 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
5
0
1 | 2 |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 0
5
0
1 | 2 |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | 0
5
0
1 | 2 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
5
0
1 | 2 |
| Nephropathy | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | 0
5
0
1 | 2 |
| Pelvis, Inflammation | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 2 | 1 | | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | 1 | 0
5
0
1 | 2 |

* .. 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:
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Experiment Number: 20523 - 03
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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| Wistar Han Rats Female
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | females
(cont...) | | |
|------------------------------------|-------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|------|------|
| | ANIMAL ID | | 0604 | 0605 | 0606 | 0607 | 0608 | 0609 | 0610 | 0611 | 0612 | 0613 | 0614 | 0615 | 0616 | 0617 | 0618 | 0619 | 0620 | 0621 | 0622 | 0623 | | 0624 | 0625 |
| | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | 6 | 7 | 6 | 6 | 6 | 5 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | |
| | | | 0 | 3 | 8 | 4 | 2 | 1 | 3 | 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | |
| | | | 4 | 2 | 4 | 6 | 6 | 6 | 3 | 0 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 2 | 2 | |
| | | | 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 | 0 | 0 | 0 | 0 | 0 | |
| | | | 5 | 5 | 5 | 5 | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | |
| Renal Tubule, Cyst | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Urinary Bladder | | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |

* .. 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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 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
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 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0763 | 0773 | 0773 | 0763 | 0776 | 0776 | 0766 | 0756 | 0766 | 0773 | 0756 | 0766 | 0766 | 0773 | | 0773 | 0773 | 0773 | 0773 |
| 30 mg/m3 | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | 00550 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Basophilic Focus | | X | X | X | X | X | | X | X | X | | | | | | | | | | X | | | | | | 24 |
| Clear Cell Focus | | | | X | | | | | | | | | | | | | | | | | | | | | | 4 |
| Fatty Change | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 3 2.0 |
| Hepatodiaphragmatic Nodule | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Necrosis | | | | | | | | | | | | | | | | | | | 4 | | | | | | | 1 4.0 |
| Bile Duct, Cyst | | | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 2.0 |
| Bile Duct, Dilatation | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Bile Duct, Hyperplasia | | 1 | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | 6 1.0 |
| Mesentery | | | | | + | | | | | | | | | | | | | | + | + | + | + | | | | 9 |
| Fat, Necrosis | | | | | 2 | | | | | | | | | | | | | | 1 | 1 | | 1 | | | | 7 1.4 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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|------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0763 | 0773 | 0773 | 0763 | 0776 | 0776 | 0766 | 0756 | 0766 | 0773 | 0756 | 0766 | 0766 | 0773 | 0773 | 0773 | 0773 | | |
| 30 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | |
| Acinus, Atrophy | | 1 | | | | | | 2 | | | | | | | | | | | | | | | | | 2 1.5 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cardiomyopathy | 2 | | | | | 2 | | | | | | 1 | 2 | | | | | | | | | | 1 | 8 1.4 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Angiectasis | 1 | | 1 | 1 | | 1 | | 1 | | 2 | | 4 | 1 | 2 | 1 | | | | 1 | | | | 2 | 1 | 28 1.3 |
| Hypertrophy | | 3 | 1 | 1 | 1 | 2 | 2 | | | | 1 | | 2 | | 1 | | 1 | | | | | | | | 15 1.5 |
| Necrosis | | | | | | | | | | | | | | | 4 | | | | | | 2 | | | | 2 3.0 |
| Vacuolization Cytoplasmic | | 1 | | 1 | 1 | | | | | | 1 | | 1 | 1 | | | 1 | | | | | | | | 14 1.1 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | M | + | + | + | + | + | + | + | + | 47 |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

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 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0672 | 0773 | 0773 | 0673 | 0773 | 0676 | 0666 | 0566 | 0677 | 0675 | 0668 | 0661 | 0733 | 0773 | 0773 | 0773 | 0773 | 0773 | | |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | | |
| Pars Distalis, Hyperplasia | | 2 | 3 | | | | 2 | | 2 | 1 | 1 | | | | | 2 | | 2 | | | | | | | 12 | 1.8 |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Hyperplasia | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | | 2 | | 2 | 2 | 2 | 1 | 1 | 2 | | 2 | 2 | 45 | 1.7 |
| Follicle, Hyperplasia | | | | | | | | | | | 1 | | | | | | | | 1 | | | | 1 | | 7 | 1.1 |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|
| Clitoral Gland Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | 13 | 1.4 |
| Ovary Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 12 | 1.5 |
| Uterus Endometrium, Hyperplasia, Cystic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 12 | 1.3 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Lymph Node, Bronchial Hyperplasia, Lymphohistiocytic | + | + | + | + | I | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 44 | 37 | 1.6 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0672 | 0773 | 0773 | 0663 | 0773 | 0776 | 0666 | 0556 | 0667 | 0559 | 0668 | 0661 | 0773 | 0773 | | 0773 | 0773 | 0773 | |
| 30 mg/m3 | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | 00550 |

Skeletal Muscle + 3

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|--|--|---|---|---|--|---|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|----|--|--|
| Brain | + | | | | | | | | | | | | | | | | | | | | | | | 50 | | |
| Compression | 3 | | | 2 | 1 | 3 | | 2 | | | | | 3 | | | | | | | | | | | | | |
| Hydrocephalus | | | | | | | | | | | | | 4 | | | | | | | | | | | 1 | | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | 2 | | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | 2 | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|--|--|
| Larynx | + | | | | | | | | | | | | | | | | | | | | | | | 50 | | |
| Infiltration Cellular, Mixed Cell | | 1 | | | 1 | 1 | 1 | | | | | 1 | 1 | | | | | | | | | | 2 | 1 | | |
| Epiglottis, Hyperplasia, Squamous | 1 | | | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | | 1 | 2 | 1 | 1 | | | | | 1 | 2 | | |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | | |
| Lung | + | | | | | | | | | | | | | | | | | | | | | | | 50 | | |
| Fibrosis | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | | |
| Infiltration Cellular, Histiocyte | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Inflammation, Chronic Active | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | | | | | | 1 | | 2 | 1 | 1 | 1 | | 2 | | | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 3 | 1 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | | | |
| Alveolar Epithelium, Metaplasia, Squamous | | | | | 2 | 2 | | | 2 | | | | | | | | | | | | | | | | | |
| Alveolus, Proteinosis | | | 1 | | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | | 1 | 1 | 1 | 1 | | | | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | 1 | | | | | | | | 1 | 1 | | | | | |
| Nose | + | | | | | | | | | | | | | | | | | | | | | | | 49 | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----------|------------|------------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0763 | 0773 | 0773 | 0763 | 0773 | 0763 | 0766 | 0756 | 0766 | 0773 | 0756 | 0766 | 0766 | 0773 | 0773 | 0773 | 0773 | | | | | |
| 30 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | | | | |
| Inflammation, Suppurative | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 2 | 1 | 2 | 1 | 47 | 1.2 | |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | 2 | 1 | | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 2 | 1 | 1 | 1 | 43 | 1.1 | |
| Glands, Olfactory Epithelium, Hyperplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Goblet Cell, Hyperplasia | 1 | 1 | 2 | 2 | 1 | 1 | 1 | | | 1 | 1 | 1 | | | 1 | | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 40 | 1.1 | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 49 | 2.9 | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 48 | 1.5 |
| Respiratory Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | 1 | | 8 | 1.0 | |
| Transitional Epithelium, Hyperplasia | | | | 1 | | | | | | | 1 | | | | | | | | | 1 | | | | | 1 | 4 | 1.0 | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | 1.0 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3.0 | |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Inflammation | | | | 1 | | | | | | | | | | | | | | 1 | 1 | | | | | | | 3 | 1.0 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Nephropathy | | | | 1 | | | | | | | | 2 | | | | | 2 | | | | | | | | | 5 | 1.4 | |
| Pelvis, Inflammation | 1 | 1 | | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | | | 1 | 2 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 41 | 1.1 | |

* .. 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:
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Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
Metal working fluids (Trim VX)
CAS Number: TRIMVX

Date Report Requested: 10/29/2014
Time Report Requested: 10:15:41
First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS FEMALE

30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|----------|
| | 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 | 6 | 7 | 7 | 6 | 7 | 7 | 6 | 6 | 5 | 6 | 7 | 5 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 0 | 7 | 6 | 6 | 1 | 7 | 3 | 9 | 8 | 1 | 3 | 3 | 3 | 3 | |
| | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 8 | 4 | 7 | 6 | 7 | 2 | 3 | 9 | 4 | 4 | 3 | 2 | 3 | 2 | |
| 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 | 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 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Urinary Bladder | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | |

* .. 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

Experiment Number: 20523 - 03

Test Type: CHRONIC

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: 10/29/2014

Time Report Requested: 10:15:41

First Dose M/F: 07/20/09 / 07/20/09

Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|
| WISTAR HAN RATS FEMALE | DAY ON TEST | 06033 | 04733 | 07733 | 07733 | 07733 | 07733 | 07733 | 07733 | 07733 | 06733 | 07733 | 07733 | 07733 | 07733 | 07733 | 05733 | 07733 | 06733 | 07733 | 07733 | 06733 | 07733 | females
(cont...) |
| | 100 mg/m3 | 363 | 363 | 222 | 222 | 111 | 111 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | 222 | |
| | ANIMAL ID | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Basophilic Focus | X | | X | | X | | X | X | | X | | | X | X | X | | X | | X | | X | X | X |
| Clear Cell Focus | | | | | X | | X | | | | | | | | | | X | | | | | | |
| Eosinophilic Focus | | | | | | | | | | | | | | | | | | | | | | | |
| Hepatodiaphragmatic Nodule | | | | | | | | | | | | | | | | | | | | | 2 | | |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | 1 | | | | | | |
| Bile Duct, Cyst | | | | | | | | | | | | 2 | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | 1 | 1 | | | 1 | | 1 |
| Serosa, Fibrosis | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Mesentery | | | | | | | | | | | | | + | | | | | | | | | | |
| Fat, Necrosis | | | | | | | | | | | | | 1 | | | | | | | | | | 2 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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
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Species/Strain: RATS/Wistar Han

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Metal working fluids (Trim VX)
CAS Number: TRIMVX

Date Report Requested: 10/29/2014
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First Dose M/F: 07/20/09 / 07/20/09
Lab: BNW

| WISTAR HAN RATS FEMALE

100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | | | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|
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Acinus, Atrophy

Salivary Glands

Stomach, Forestomach

Stomach, Glandular

Tongue
Hyperkeratosis

CARDIOVASCULAR SYSTEM

Blood Vessel

Heart
Cardiomyopathy

ENDOCRINE SYSTEM

Adrenal Cortex

 Angiectasis

 Hyperplasia

 Hypertrophy

 Necrosis

 Vacuolization Cytoplasmic

Adrenal Medulla

 Hyperplasia

Islets, Pancreatic

* .. 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

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Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|----------------------|
| | 06033 | 04363 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | 07333 | | |
| 100 mg/m3 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | | |
| ANIMAL ID | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | 007 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parathyroid Gland | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | |
| Pars Distalis, Hyperplasia | | | 1 | | | 2 | 2 | 1 | | 1 | 2 | | 1 | | | | | | | 1 | 1 | 1 | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| C-cell, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | | | 2 | 1 | 2 | 1 | 1 | 2 | | 1 | 1 | | 1 | 2 | 2 |
| Follicle, Hyperplasia | | | | 3 | 1 | | | | | | | | | | | | | | | | | | | |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | 3 | 1 | | | | | 1 | | 2 | 1 | 2 | | | | | 1 | 1 | | | |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst | | | | | 1 | | 1 | | | | | | 1 | | | | | | | | 1 | | | |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Thrombosis | | | | | | | | | | | | | | | | | | | | | | | | |
| Endometrium, Hyperplasia, Cystic | | | | | | | | | | | | | | | | | | | | | | | | |
| Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | |

HEMATOPOIETIC 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 FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 100 mg/m3 | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | |
| | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 5 | |
| | 3 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 6 | 3 | 2 | |
| | ANIMAL ID | 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 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic | + | + | I | + | + | + | + | + | M | + | + | M | + | M | + | + | + | M | + | + | M | M | |
| | 2 | 2 | | 2 | 3 | 2 | 2 | | 1 | | | 1 | M | 2 | 2 | | | 1 | 1 | 2 | M | M | |
| Lymph Node, Mandibular
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic
Hyperplasia, Plasma Cell
Pigmentation, Hemosiderin | + | + | + | + | + | + | + | + | M | + | + | + | + | M | + | + | + | + | + | + | + | + | |
| | 2 | 2 | | | 3 | 3 | | | 1 | | 3 | 2 | 3 | 1 | | 2 | 4 | | 4 | 2 | 2 | 1 | |
| | | | 4 | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Mesenteric
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | | | | | 3 | | | | | | | | | | | | | | | | | | |
| Spleen
Cyst
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | | | | | | 1 | 2 | | | | | | | | 1 | 2 | | | 3 | |
| Thymus
Atrophy | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | 1 | 1 | | | | | | | | | | | 2 | 1 | | | | | 2 | | | 3 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland
Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. 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

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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNV

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | 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 | |
| WISTAR HAN RATS FEMALE | | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | females
(cont...) |
| | | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 5 | 3 | |
| | 100 mg/m3 | 3 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 3 | 3 | 6 | 3 | 3 | 2 | 3 | 2 | 3 | |
| | | 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 | females
(cont...) |
| | | 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 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | females
(cont...) | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Duct, Cyst | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Skin | + | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Ulcer | | | | | | | | | | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Bone | + | | | | | | | | | | | | | | | | | | | | | | | | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | |
| | + | | | | | | | | | | | | | | | | | | | | | | | | |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Brain | + | | | | | | | | | | | | | | | | | | | | | | | | |
| Compression | 3 3 3 3 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocephalus | 3 2 1 3 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | | |
| | + | | | | | | | | | | | | | | | | | | | | | | | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Larynx | + | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Mixed Cell | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Chronic Active | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Epiglottis, Hyperplasia, Squamous | 1 1 3 3 2 2 2 3 3 3 2 2 1 2 2 2 2 2 2 3 2 2 2 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| Epiglottis, Metaplasia, Squamous | 2 3 3 3 3 3 3 3 3 3 2 3 2 2 3 3 3 2 3 2 3 2 3 2 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| Lung | + | | | | | | | | | | | | | | | | | | | | | | | | |

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

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 Lab: BNW

| WISTAR HAN RATS FEMALE

100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 |
| | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | | | 7 | 7 | 6 |
| | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 1 | 3 | 5 | 3 | |
| | 3 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | |
| | 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 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| Fibrosis | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | |
| Hyperplasia, Lymphohistiocytic Infiltration Cellular, Histiocyte | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | |
| Inflammation, Chronic Active | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| Alveolar Epithelium, Hyperplasia | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 4 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Alveolar Epithelium, Metaplasia, Squamous | 1 | | | 2 | 2 | | 1 | 2 | | | 1 | 1 | | | | 2 | | 4 | | | | | | 2 | |
| Alveolus, Proteinosis | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 4 | 3 | 3 | 3 | 3 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | 1 | | | 2 | | | | | 1 | 2 | | | | 1 | 1 | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Inflammation, Suppurative | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | | 1 | 1 | 2 | 1 | 1 | 1 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| Goblet Cell, Hyperplasia | 1 | 1 | | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | 2 | | | | | | | | | | | | 1 | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| Respiratory Epithelium, Hyperplasia | | | | | | 1 | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 |
| Transitional Epithelium, Hyperplasia | | | | 2 | | 2 | 2 | 1 | | | | | | | 2 | 1 | 1 | | 2 | | 1 | 1 | 1 | 1 | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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|------------------------|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS FEMALE | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 |
| 100 mg/m3 | | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 6 | 7 |
| 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 |
| | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |

females
(cont...)

Harderian Gland Inflammation + 1

Zymbal's Gland

URINARY SYSTEM

Kidney +

Hydronephrosis

Nephropathy

Pelvis, Inflammation

Renal Tubule, Cyst

1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1

Ureter

Cyst

Urinary Bladder +

* .. 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
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| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0737 | 0733 | 0733 | 0733 | 0734 | 0733 | 0733 | 0733 | 0732 | 0734 | 0735 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0736 | | 0736 |
| 100 mg/m3 | 00726 | 00727 | 00728 | 00729 | 00730 | 00731 | 00732 | 00733 | 00734 | 00735 | 00736 | 00737 | 00738 | 00739 | 00740 | 00741 | 00742 | 00743 | 00744 | 00745 | 00746 | 00747 | 00748 | 00749 | 00750 | 50 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Basophilic Focus | X | X | X | X | X | | | | | X | | | X | | | | X | | X | | X | X | X | | | 25 |
| Clear Cell Focus | | | X | | | | | | | | | | | | | | X | | X | X | | | | | | 8 |
| Eosinophilic Focus | | | | | | | | | | X | | | | | | | | | X | | | | | | | 2 |
| Hepatodiaphragmatic Nodule | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Inflammation, Granulomatous | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 2 1.0 |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 4 1.0 |
| Serosa, Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | | 1 4 1.3 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
 CAS Number: TRIMVX

Date Report Requested: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0735 | 0733 | 0733 | 0733 | 0738 | 0739 | 0733 | 0732 | 0734 | 0735 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0736 | 0736 | | |
| 100 mg/m3 | 00726 | 00727 | 00728 | 00729 | 00730 | 00731 | 00732 | 00733 | 00734 | 00735 | 00736 | 00737 | 00738 | 00739 | 00740 | 00741 | 00742 | 00743 | 00744 | 00745 | 00746 | 00747 | 00748 | 00749 | 00750 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|
| Acinus, Atrophy | 2 | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Salivary Glands | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Stomach, Forestomach | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Stomach, Glandular | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Tongue Hyperkeratosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------|
| Blood Vessel | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Heart Cardiomyopathy | + | | | | | | | | | | | | | | | | | | | | | | | | 50 1 2.0 |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|--|---|---|---|---|--|---|---|--|---|--|--|---|---|--|--|---|--|--|---|---|--|---|----------|
| Adrenal Cortex | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Angiectasis | 1 | | 2 | 1 | 1 | 2 | | 3 | 1 | | 2 | | | 3 | 1 | | | 1 | | | 2 | 2 | | 1 | 27 1.6 |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Hypertrophy | | | | | | | | | | | | | | | | | | | | | | | | | 10 1.2 |
| Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Vacuolization Cytoplasmic | | | | | | | | | | | | | | | | | | | | | | | | | 11 1.0 |
| Adrenal Medulla Hyperplasia | + | | | | | | | | | | | | | | | | | | | | | | | | 49 1 2.0 |
| Islets, Pancreatic | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |

* .. 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:
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 Lab: BNW

| WISTAR HAN RATS FEMALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|-------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0735 | 0733 | 0733 | 0733 | 0734 | 0733 | 0733 | 0732 | 0734 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0737 | 0736 | 0731 | | |
| ANIMAL ID | 00726 | 00707 | 00708 | 00700 | 00701 | 00702 | 00703 | 00704 | 00705 | 00706 | 00707 | 00708 | 00709 | 00710 | 00711 | 00712 | 00713 | 00714 | 00715 | 00716 | 00717 | 00718 | 00719 | 00720 | | |
| Parathyroid Gland | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | 47 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Angiectasis | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 1.0 | |
| Pars Distalis, Hyperplasia | 3 | | | 1 | | | 1 | | | | 3 | 3 | | | | | | 1 | | | | | | | 16 1.6 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Hyperplasia | 2 | 1 | 1 | | 1 | 1 | | 2 | 2 | 3 | 2 | | 2 | | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 42 1.5 |
| Follicle, Hyperplasia | | | 4 | | | | | | | | | | | | | | | | | | | | | | | 3 2.7 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 2 1.5 |
| Inflammation | | 1 | | 1 | | | | | 1 | | | | | | | | | | | | | | 1 | | | 12 1.3 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cyst | 2 | | 1 | | | | 2 | | | | | | | | | | | 1 | | | 2 | 2 | | | | 10 1.4 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Thrombosis | | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Endometrium, Hyperplasia, Cystic | | | | 1 | | | | | | | | 1 | | | | | 1 | | | 1 | | | | | | 10 1.3 |
| Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | 1 4.0 |

* .. 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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| WISTAR HAN RATS FEMALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node | | | | + | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | M | M | + | M | + | + | + | + | + | M | + | + | + | + | M | M | + | + | 36 | |
| | 1 | 2 | 3 | 2 | | 2 | | | 3 | | 2 | 2 | 2 | 1 | 1 | 1 | | 3 | 1 | 1 | 3 | | 2 | 2 | 31 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1.8 | |
| Lymph Node, Mandibular
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 3.0 | |
| Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic
Hyperplasia, Plasma Cell
Pigmentation, Hemosiderin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | M | + | + | + | + | + | M | + | 45 | |
| | 3 | 2 | | | 3 | | 2 | 1 | | 2 | 2 | 2 | 2 | | | | | | 2 | | | 2 | | 2 | 28 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 2.2 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 4.0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 2.0 | |
| Lymph Node, Mesenteric
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 3.0 | |
| Spleen
Cyst
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1.0 | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | 7 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 2.1 | |
| Thymus
Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 15 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1.9 | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|
| Mammary Gland
Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 2.0 |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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|-------------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
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| Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 2.0 | | | | | | | | |
| Skin | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 | | | | | | | | |
| Ulcer | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 2.0 | | | | | | | | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |
| Skeletal Muscle | + | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | | | | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |
| Compression | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 17 2.9 | | | | | | | | |
| Hydrocephalus | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 8 2.4 | | | | | | | | |
| Peripheral Nerve | + | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | |
| Spinal Cord | + | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |
| Infiltration Cellular, Mixed Cell | 1 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 22 1.1 | | | | | | | | |
| Inflammation, Chronic Active | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 1.0 | | | | | | | | |
| Epiglottis, Hyperplasia, Squamous | 3 3 3 3 3 2 1 2 1 3 2 1 2 2 3 3 2 2 2 2 3 3 2 3 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | 2.3 | | | | | | | | |
| Epiglottis, Metaplasia, Squamous | 3 3 3 3 3 2 2 2 3 3 3 3 3 3 3 3 2 3 3 2 3 3 2 3 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | 2.7 | | | | | | | | |
| Lung | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |

* .. 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

Experiment Number: 20523 - 03
 Test Type: CHRONIC
 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: 10/29/2014
 Time Report Requested: 10:15:41
 First Dose M/F: 07/20/09 / 07/20/09
 Lab: BNW

| WISTAR HAN RATS FEMALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----|
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2 | 0
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3 | 0
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1 | 0
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2 | 0
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6 | 0
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5 | 0
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2 | 0
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6 | 0
7
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1 | 0
7
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6 | |
| ANIMAL ID | 0
7
2
6 | 0
7
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7 | 0
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8 | 0
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7 | 0
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8 | 0
7
4
9 | 0
7
4
0 | 0
7
4
1 | |
| Fibrosis | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 50 | 1.8 |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | 2 | | | | | | | | | | | | | 1 | 2.0 |
| Infiltration Cellular, Histiocyte | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 50 | 2.8 |
| Inflammation, Chronic Active | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 50 | 3.2 |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 3 | 3 | 2 | 3 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 50 | 2.8 |
| Alveolar Epithelium, Hyperplasia | 4 | 3 | 4 | 1 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 3 | 4 | 50 | 2.4 |
| Alveolar Epithelium, Metaplasia, Squamous | 2 | 2 | 2 | | 2 | 3 | | 1 | | 1 | | | | | | | 2 | 3 | | | 2 | | 1 | | 21 | 1.9 | |
| Alveolus, Proteinosis | 4 | 4 | 3 | | 1 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 3 | 3 | 2 | 2 | 48 | 2.8 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | 2 | 1 | 1 | | | | | 2 | | | | | 10 | 1.4 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Inflammation, Suppurative | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 48 | 1.3 |
| Glands, Olfactory Epithelium, Hyperplasia | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | | | 2 | 2 | | | 1 | 2 | 46 | 1.5 |
| Goblet Cell, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 47 | 1.1 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 50 | 3.0 |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1.5 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 50 | 1.5 |
| Respiratory Epithelium, Hyperplasia | 1 | 1 | | | | | | | | 1 | 1 | 1 | | 1 | | | | | 1 | | | | 1 | 1 | 1 | 25 | 1.0 |
| Transitional Epithelium, Hyperplasia | | | | 2 | 1 | | 1 | | 1 | | | 2 | | 1 | | | | | 1 | 1 | | | | 1 | | 21 | 1.3 |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 2 | 1.0 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|-----|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3.0 |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 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

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| WISTAR HAN RATS FEMALE

100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | | | | | | | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|--------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0735 | 0733 | 0733 | 0733 | 0734 | 0733 | 0733 | 0732 | 0734 | 0737 | 0736 | 0736 | 0737 | 0737 | | | 0737 | 0736 | 0736 | 0735 | 0732 | 0736 | 0736 | 0733 | 0733 | 0735 | 0732 | 0736 | 0736 | 0738 | 0739 | |
| ANIMAL ID | 00726 | 00727 | 00728 | 00729 | 00730 | 00731 | 00732 | 00733 | 00734 | 00735 | 00736 | 00737 | 00738 | 00739 | 00740 | 00741 | 00742 | 00743 | 00744 | 00745 | 00746 | 00747 | 00748 | 00749 | 00750 | 00751 | 00752 | 00753 | 00754 | 00755 | 00756 | 00757 | 00758 | 00759 | 00760 | | | |
| Harderian Gland Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 2 1.0 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 4.0 |
| Nephropathy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.0 |
| Pelvis, Inflammation | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30 1.1 |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 1.7 |
| Ureter Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

*** END OF REPORT ***

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