

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

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																						1

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 X .. Lesion present
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WISTAR HAN RATS MALE Control	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		
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 Acinus, Atrophy Artery, Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
	1					1				2										1			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 Hypertrophy Necrosis Vacuolization Cytoplasmic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
					1																			1		
				1	2		2			2										1	1	1			1	
	2													2												
	2		1				1	1		X	1		2		1				1	1				1		
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

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Wistar Han Rats Male		DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	males (cont...)		
Control		ANIMAL ID	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			
			3	2	2	3	3	3	3	3	3	2	3	2	6	6	3	3	3	7	3	1	2	2		9	
			0	9	9	0	0	1	0	0	1	9	1	6	2	0	0	0	5	0	6	9	9	9	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	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
Hyperplasia																											
Islets, Pancreatic			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Parathyroid Gland Fibrosis			+	+	+	M	M	M	+	+	+	+	+	+	M	+	+	+	+	M	M	+	+	+	M		
Pituitary Gland Angiectasis			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Pars Distalis, Hyperplasia			2		1		1						1										1	1			
Thyroid Gland C-cell, Hyperplasia			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Follicle, Hyperplasia			1	1	1			1	2	1	2	1	1	1			2	1	1		2	2	1	1	1	1	
							1	2																			

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis

Preputial Gland

Cyst

Inflammation

Prostate

Inflammation

+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
		1		2	1			1	1	2			2				1					1		1	1
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
2						1				2				2								1			2

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WISTAR HAN RATS MALE Control	DAY ON TEST																									males (cont...)				
	0730	0739	0772	0779	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773	0773					
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																				3			2							
Lymph Node, Bronchial	+	+	+	M	+	+	+	+	+	+	+	+	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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WISTAR HAN RATS MALE	DAY ON TEST																									males (cont...)
	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	0730	
Control	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
	1234	5678	9012	3456	7890	1234	5678	9012	3456	7890	1234	5678	9012	3456	7890	1234	5678	9012	3456	7890	1234	5678	9012	3456	7890	1234

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									1						1
Inflammation, Chronic Active		1					1														1						1
Alveolar/bronchiolar Epithelium, Hyperplasia		1		1				1																			
Alveolar Epithelium, Hyperplasia		2					1																				1
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Foreign Body																											
Inflammation, Suppurative						1										1						1					1
Goblet Cell, Hyperplasia																1		1				2					
Olfactory Epithelium, Accumulation, Hyaline Droplet		2		1				1			1	1			1		1				1						1
Respiratory Epithelium, Accumulation, Hyaline Droplet		1		1			1															1		1			
Respiratory Epithelium, Hyperplasia																											1
Transitional Epithelium, Hyperplasia		1								1																	2

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WISTAR HAN RATS MALE	DAY ON TEST																									males (cont...)
	0730	0729	0728	0727	0726	0725	0724	0723	0722	0721	0720	0719	0718	0717	0716	0715	0714	0713	0712	0711	0710	0709	0708	0707		
Control	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	
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	

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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 + .. Tissue examined microscopically M .. Missing tissue 1-4 .. Lesion qualified as:
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 I .. Insufficient tissue BLANK .. Not examined microscopically 2) Mild 4) Marked

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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	
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

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Cecum Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Artery, Inflammation				3																					1 3.0
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Duodenum Artery, Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Angiectasis	1					1															1		1		5 1.0
Basophilic Focus				X									X												5
Clear Cell Focus				X	X		X						X										X		14
Eosinophilic Focus																X									2
Hepatodiaphragmatic Nodule																						X			1
Bile Duct, Dilatation																									1 4.0
Bile Duct, Hyperplasia																									2 1.0
Mesentery																									2
Fat, Necrosis																							+	1	2 1.0

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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	
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	
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Inflammation																									1 1.0
Acinus, Atrophy										1													1	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																										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	

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 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	0739	0731	0733	0739	0732	0732	0732	0731	0733	0739	0730	0739	0739	0735	0737	0737	0737	0737	0732	0732	0736	0735		0736	0735	0737	0734	0734	0732											
Control	ANIMAL ID																																									
	00026	00007	00008	00009	00000	00001	00002	00003	00004	00005	00006	00007	00008	00009	00000	00001	00002	00003	00004	00005	00006	00007	00008	00009	00000	00001	00002	00003	00004	00005	00006	00007	00008	00009	00000							
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50							
Fibrosis																																				1	2.0					
Inflammation																																				2	4	2.0				
Testes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
Edema	2													2																							3	2.0				
Artery, Inflammation, Chronic																																					3	2.3				
Germinal Epithelium, Atrophy																																					3	2.0				
Interstitial Cell, Hyperplasia																																					2	2.0				
HEMATOPOIETIC SYSTEM																																										
Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50							
Lymph Node	+																																				11					
Iliac, Hyperplasia, Plasma Cell																																					3	1	3.0			
Lumbar, Hyperplasia, Plasma Cell	2																																				2	7	2.3			
Renal, Hyperplasia, Plasma Cell																																						2	2.5			
Lymph Node, Bronchial	+	+	M	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	M	+	M	+	+	+	39						
Lymph Node, Mandibular	+	+	+	+	+	+	+	M	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	46					
Hyperplasia, Plasma Cell																																					1	1	1.0			
Lymph Node, Mediastinal	+	I	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	43					
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50					
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50					
Hematopoietic Cell Proliferation																																					2	1	1	1	7	1.1

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 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
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 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	

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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	0736	0735	0736		0735	0736	0734	0734							
Control	ANIMAL ID																																			
	0026	0007	0008	0009	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0000	
Transitional Epithelium, Metaplasia, Squamous	1																																			2 1.0
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
SPECIAL SENSES SYSTEM																																				
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50		
Retina, Atrophy		2																																	5 2.0	
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50		
Hyperplasia																																				1 1.0
Inflammation																																				1 1.0
Lacrimal Gland																																			1	
Atrophy																																				1 2.0
Zymbal's Gland																																				1
URINARY SYSTEM																																				
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50		
Hydronephrosis		2																																		1 2.0
Nephropathy	1	1		1	1	1		1					2	2						4	2	1	3	1							1			27 1.7		
Pelvis, Inflammation	2							1	1				1				1	1	1																19 1.2	
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 MALE	DAY ON TEST																									males (cont...)
	0731	0733	0733	0733	0732	0731	0730	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729	0729		
10 mg/m3	0020	0020	0020	0020	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022	0022		

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
Clear Cell Focus	X	X		X				X	X						X				X			X	
Hepatodiaphragmatic Nodule																							
Infiltration Cellular, Lymphocyte																							
Inflammation, Granulomatous									1														
Mixed Cell Focus															X								
Bile Duct, Hyperplasia									1														
Mesentery																							
Fat, Necrosis			+												+								
			3												2								
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Inflammation	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
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 M .. Missing tissue
 A .. Autolysis precludes evaluation
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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 MALE 10 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	0	ANIMAL ID	males (cont...)		
		7	7	7	7	7	7	6	7	7	7	7	6	7	5	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	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	9	0	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		
		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		
		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		
		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

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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	0733	0730	0731	0732	0735	0736	0737	0738	0739	0740	0741	0742	0743	0744	0745	0746	0747	0748	0749	0750	0751	0752	0753	0754		
	0	0	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	5	
	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	
	1	0	0	1	9	5	0	9	1	0	1	4	0	9	0	1	2	9	5	3	7	2	2	0	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	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	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	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	1	

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 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 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

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 | 0739 | 0729 | 0732 | 0733 | 0733 | 0733 | 0738 | 0733 | 0738 | 0733 | 0733 | 0730 | 0729 | 0735 | | | 0729 | 0736 | 0737 | 0737 |
| 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 | |
| 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 | M |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Date Report Requested: 10/29/2014

Test Type: CHRONIC

Metal working fluids (Trim VX)

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 | 0 | 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 | 6 | 7 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 5 |
| | | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 2 | 0 | 2 | 2 | 2 | 3 | 7 |
| 10 mg/m3 | | 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 |
| | 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 |
| | 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 |
| | 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 |
| | 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 | 5 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

males (cont...)

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|--|--|--|--|--|--|--|--|---|--|--|---|---|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ulcer | | | | | | | | | 3 | | | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

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

RESPIRATORY SYSTEM

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

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

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 | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 0
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0 | 0
7
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1 | 0
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9 | 0
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5 | 0
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9
0 | 0
7
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9 | 0
7
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1 | 0
7
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0 | 0
7
3
1 | 0
6
8
4 | 0
7
3
0 | 0
5
8
9 | 0
7
3
0 | 0
7
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1 | 0
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2 | 0
7
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9 | 0
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3 | 0
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9 | 0
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9 | 0
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3
0 | 0
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5 | | | |
| ANIMAL ID | 0
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4 | 0
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5 | 0
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7 | 0
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3 | 0
0
2
2
4 | 0
0
2
2
5 |
| Infiltration Cellular, Histiocyte | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 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 | 1 | 1 | 1 | 1 | 1 | | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | 1 | 1 | | 1 | | | 1 | 1 | | | | | | 1 | 1 | | | |
| Alveolar Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 2 | | 2 | 1 | | 1 | 1 | 1 | 1 | 1 | 3 | | |
| Alveolus, Proteinosis | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| Mediastinum, Inflammation, Chronic | | | | | | 2 | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Inflammation, Suppurative | | 1 | | 2 | 2 | 2 | 1 | 1 | | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 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 | |
| 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 | 2 | | |
| Olfactory Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Metaplasia, Squamous | | | | | 2 | | | | | | | | | | | | | | | | | | | | | |
| 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 | 2 | | |
| Respiratory Epithelium, Hyperplasia | | 1 | | | | | | | | 1 | 1 | | | | | | 1 | 1 | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | 1 | | | | | | | | | | | | | | | 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
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 X .. Lesion present
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 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 | 0739 | 0732 | 0733 | 0733 | 0733 | 0738 | 0733 | 0738 | 0733 | 0733 | 0730 | 0732 | 0737 | 0737 | 0736 | 0737 | 0737 | 0737 | 0735 | | | |
| | 0 | 0 | 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 | 5 | 0 | |
| | 3 | 3 | 3 | 3 | 2 | 1 | 9 | 2 | 3 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 0 | 2 | 0 | 2 | 7 | 2 | 2 | 2 | 3 | 7 | 0 | |
| | 1 | 0 | 0 | 1 | 9 | 5 | 0 | 9 | 1 | 0 | 1 | 4 | 0 | 9 | 0 | 1 | 2 | 9 | 5 | 9 | 3 | 7 | 2 | 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 | 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 | 2 | 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 | |
| | 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 | 0 | |
| Retina, Atrophy | 2 | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | |
| Harderian Gland Cyst | + | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| Inflammation | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

URINARY SYSTEM

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

* .. 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 |
|----------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 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 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | M | + | + | + | + | 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 | 00227 | 00228 | 00229 | 00230 | 00231 | 00232 | 00233 | 00234 | 00235 | 00236 | 00237 | 00238 | 00239 | 00240 | 00241 | 00242 | 00243 | 00244 | 00245 | 00246 | 00247 | 00248 | 00249 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------------|
| 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

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 | | 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 | | | | | | | | | | | | | | | | | | | | | | M | 1 3.0 |
| Lymph Node, Mediastinal | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Hyperplasia, Lymphohistiocytic | | | | | 1 | | 2 | | | 2 | 2 | 2 | | | | | | 2 | | 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 | | 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
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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
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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 | 002226 | 00002 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|--|--|---|--|--|---|---|--|--|--|--|--|--|--|--|--|--|---|-------|--------|
| Cyst Epithelial Inclusion | X | | | | | | | | | | | | | | | | | | | | 2 | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | 1 2.0 | |
| Ulcer | 2 | 2 | | | 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 | 1 | 43 1.0 | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | 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
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Experiment Number: 20523 - 03
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 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
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 | 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 | 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 | 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 | 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 | 2 | 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
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 | 0753 | | |
| ANIMAL ID | 002266 | 002267 | 002268 | 002269 | 002270 | 002271 | 002272 | 002273 | 002274 | 002275 | 002276 | 002277 | 002278 | 002279 | 002280 | 002281 | 002282 | 002283 | 002284 | 002285 | 002286 | 002287 | 002288 | 002289 | | |
| Retina, Atrophy | | | | 2 | 2 | | | | | | | 2 | | | | | | | | | | | | | 5 2.0 | |
| Harderian Gland Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 1 1.0 | |
| Hyperplasia | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 1 2.0 | |
| Infarct | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 | |
| 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 Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 | 50 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 | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|----------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|
| | 054 | 066 | 073 | 072 | 064 | 073 | 053 | 073 | 073 | 047 | 077 | 055 | 077 | 077 | 077 | 077 | 066 | 077 | 077 | 066 | 077 | 067 | 077 | 077 | | |
| 30 mg/m3 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | | |
| | 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 010 | 011 | 012 | 013 | 014 | 015 | 016 | 017 | 018 | 019 | 020 | 021 | 022 | 023 | 024 | 025 | |

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 | | | | |
| 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 | | | | | | | | | | | | | | | | | | | |
| 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 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | 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 | 066 | | | 077 |
| 30 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 | |
| | 4 | 4 | 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 | 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 | | |
| Acinus, Atrophy | | | | | | | | | 2 | | 1 | | | | | | | | 2 | 1 | | 1 | | | 2 | | |
| Acinus, Hyperplasia | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cardiomyopathy | | | 1 | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | | | | | | 2 | | |
| Endocardium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hypertrophy | 1 | | | 2 | | | | | 1 | | | | | | | | | | 1 | 1 | | | | | 2 | | |
| Thrombosis | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vacuolization Cytoplasmic | | | | 1 | | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | | | 1 | 1 | | 1 | 1 | | 1 | | |
| Adrenal Medulla | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Parathyroid Gland | M | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | M | + | + | |
| 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
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 | 077 | 066 | 077 | 067 | | | 077 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 004 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 004 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 001 | |
| 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 | 1 | 1 | |
| 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
 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 | | | | | | | | | | | | | | | | | | | | |
| | | 054 | 066 | 073 | 072 | 064 | 073 | 053 | 073 | 073 | 045 | 072 | 075 | 077 | 077 | 077 | 077 | 066 | 077 | 076 | 077 | |
| 30 mg/m3 | | ANIMAL ID | | | | | | | | | | | | | | | | | | | | males (cont...) |
| | | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | 004 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |

HEMATOPOIETIC SYSTEM

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

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
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 | | | | | | | | | | | | | | | | | | | | | | | | 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 | | | 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 | M | | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Cyst Epithelial Inclusion | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | 2 | 3 | | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
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 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
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | |
|---|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|--------------------|-----|
| | 054 | 066 | 073 | 072 | 064 | 073 | 055 | 077 | 073 | 044 | 077 | 075 | 077 | 077 | 077 | 077 | 066 | 077 | 077 | 066 | | | 077 |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 3 | 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 | 1 |
| Foreign Body | | | | | | | | | | | X | | | | | | | | | | | | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Histiocyte | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 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 |
| 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 |
| 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 | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Suppurative | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 2 | 1 | 2 | 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 | 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 |
| 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 | 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
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 X .. Lesion present
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 BLANK .. Not examined microscopically

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 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 | |
| | DAY ON TEST | 5 | 6 | 7 | 7 | 6 | 7 | 5 | 7 | 7 | 4 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 7 | |
| WISTAR HAN RATS MALE | | 5 | 6 | 3 | 2 | 4 | 3 | 5 | 3 | 3 | 5 | 2 | 2 | 5 | 3 | 2 | 3 | 0 | 3 | 9 | 2 | 3 | 3 | 2 | |
| 30 mg/m3 | | 4 | 6 | 0 | 9 | 6 | 0 | 5 | 0 | 0 | 2 | 9 | 9 | 1 | 1 | 9 | 0 | 4 | 0 | 4 | 9 | 9 | 0 | 6 | |
| | 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 | |
| | | 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 | 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 | males
(cont...) |

SPECIAL SENSES SYSTEM

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

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst | | | | | | | | | | | | | | | | | 1 | | | | | | |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | |
| Infarct | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | |
| Nephropathy | | | | 2 | | 1 | 1 | | 2 | 2 | 2 | | | | 2 | 1 | 2 | | 2 | | 2 | | 1 |
| Pelvis, Inflammation | | | | | 1 | | | | | | | | | | | | | | | 1 | 2 | | |
| 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

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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
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 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 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 00426 | 50 |

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 | | | | | 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
 I .. Insufficient tissue
 M .. Missing tissue
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 BLANK .. Not examined microscopically
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Experiment Number: 20523 - 03
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 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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 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 | | | |
| 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 1.4 | | |
| Acinus, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 | | |
| 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 | 22 1.1 | |
| Endocardium, Hyperplasia | | | 2 | | | | | | | | | | | | | | | | | | | | | | 2 2.5 | | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Angiectasis | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 2.0 | | |
| Hypertrophy | 2 | | | 1 | | | | | | | 1 | | 1 | | | | 1 | | | | 1 | | | 1 | 13 1.2 | | |
| Thrombosis | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 2.0 | | |
| Vacuolization Cytoplasmic | 1 | 1 | | | 1 | | | | | 1 | | X | | 1 | | 1 | | | | 1 | | | | 1 | 21 1.0 | | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | 46 | | |
| Hyperplasia | | | | | | 2 | | | | | | | | | | | | | | | | | | | 1 2.0 | | |

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

HEMATOPOIETIC SYSTEM

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

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
 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 | | | | | | | | | | | | | | | | | | | | | | | | * 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 | |
| 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 |
| | 4 | 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 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| 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 | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Infiltration Cellular, Mixed Cell | | | | | | | | | | | | | | | | | | | | | | | | | | | 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
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 | 0766 | 0767 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | | |
| 30 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0042 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | | |
| 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 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 | | 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 | | 1 | | 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 | 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 | 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

2) Mild 4) Marked

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| WISTAR HAN RATS MALE | DAY ON TEST | 0730 | 0729 | 0770 | 0773 | 0773 | 0771 | 0779 | 0773 | 0790 | 0765 | 0763 | 0779 | 0771 | 0770 | 0777 | 0773 | 0773 | 0753 | 0766 | 0773 | 0773 | 0773 | 0777 | 0773 | 0770 | 0755 | 0766 | 0777 | 0773 | 0777 | 0777 | 0773 |
| | ANIMAL ID | 00601 | 00602 | 00603 | 00604 | 00605 | 00606 | 00607 | 00608 | 00609 | 00610 | 00611 | 00612 | 00613 | 00614 | 00615 | 00616 | 00617 | 00618 | 00619 | 00620 | 00621 | 00622 | 00623 | 00624 | 00625 | 00626 | 00627 | 00628 | 00629 | 00630 | 00631 | 00632 |

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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eosinophilic Focus | | X | X | | X | X | | | X | | | X | X | X | X | | | | | X | X | | | | | | | X | | | | | | X | |
| Fatty Change | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hepatodiaphragmatic Nodule Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mixed Cell Focus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Dilatation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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
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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

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

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mesentery
Fat, Necrosis | + | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | + | | | | | | | | | | | | 2 |
| Pancreas
Acinus, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Stomach, Glandular
Mineralization | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Heart
Cardiomyopathy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | 2 | 1 | 1 | 1 | | 1 | 1 | | | | 2 | | | | | | | | | | 2 | 1 | | | 1 | |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Adrenal Cortex
Angiectasis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Hypertrophy | 1 | | 1 | 1 | 1 | | | | | 1 | 1 | | | 1 | | | | | | | | | | | 2 | |
| Vacuolization Cytoplasmic | 1 | | 1 | 1 | 1 | | | | 1 | 1 | 1 | | 1 | 1 | | | | | | 1 | 1 | | | 1 | | |
| Adrenal Medulla
Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| | | | | | | | | 1 | | | | | | | M | | | | | | | | | | | |

* .. 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 | | | | | | | | | | | | | | | | | | | | males
(cont...) | | | |
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| ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | |
| Islets, Pancreatic | + | | | | | | | | | | | | | | | | | | | | | | | |
| Parathyroid Gland | + | | | | | | | | | | | | | | | | | | | | | | | M |
| Pituitary Gland
Cyst | + | | | | | | | | | | | | | | | | | | | | | | | |
| Pars Distalis, Hyperplasia | + | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Thyroid Gland
C-cell, Hyperplasia
Follicle, Hyperplasia | + | | | | | | | | | | | | | | | | | | | | | | | 1 1 2 2 1 1 2 1 1 1 1 2 2 1 1 2 2 1 1 1 1 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | | | | | | | | | | | | | | | | | | | | | | | |
| Preputial Gland
Fibrosis
Inflammation | + | | | | | | | | | | | | | | | | | | | | | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 |
| Prostate
Inflammation | + | | | | | | | | | | | | | | | | | | | | | | | 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:
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Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|
| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | 0730 | 0730 | 0730 | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | males
(cont...) |
| | ANIMAL ID | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | 0600 | |
| | | 12 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Edema | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Artery, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Germinal Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Interstitial Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

HEMATOPOIETIC SYSTEM

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

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
+ .. Tissue examined microscopically
X .. Lesion present
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A .. Autolysis precludes evaluation
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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

| | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|
| | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | | |
| WISTAR HAN RATS MALE | 30 | 32 | 33 | 33 | 33 | 32 | 33 | 39 | 33 | 39 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | | |
| 100 mg/m3 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | |
| ANIMAL ID | 60 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | |
| | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | | |
| | males (cont...) | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Mixed Cell | 2 | | 1 | | 1 | | 1 | | 1 | 2 | | 2 | 1 | 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 | 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 | 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 | |
| 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 | |
| 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 | |
| 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 | 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 | 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 | 1 |
| Transitional Epithelium, Hyperplasia | 2 | | 1 | | 2 | | | | 1 | | | | | | 2 | | 1 | 1 | | | | 1 | | 2 | |
| Transitional Epithelium, Metaplasia, Squamous | | | 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
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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

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...) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|
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3 | 6
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5 | |

Trachea +

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|--|--|--|--|---|--|--|--|--|--|--|---|--|--|---|--|--|--|--|--|--|--|--|---|--|--|--|--|--|
| Eye | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Retina, Atrophy | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | |
| Harderian Gland | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Lacrimal Gland | | | | | | | | | | | | | + | | | | | | | | | | | | | | | | | |
| Atrophy | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|--|---|--|---|---|--|--|--|--|---|---|---|--|---|---|---|--|--|--|---|---|--|--|--|--|--|--|---|
| Kidney | + | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydronephrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Granulomatous | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Metaplasia, Lipocyte | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nephropathy | 1 | 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
 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | | | | |
| 100 mg/m3 | 7 | 7 | 7 | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 6 | 7 | 4 | 7 | 4 | 5 | 7 | 6 | 7 | 4 | 5 | 7 | 7 | 3 | |
| | 3 | 3 | 2 | 4 | 3 | 3 | 8 | 1 | 3 | 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 | 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 | 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 | |
| | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 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 | |

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
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 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically
 1-4 .. Lesion qualified as:
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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 MALE

100 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 | | |
| | 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 | 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 | 8 | 0 | 7 | 9 | 9 | 9 | 6 | 7 | | |
| | 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 | | |
| | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 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 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mesentery
Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | 5 | 4 2.0 |
| Pancreas
Acinus, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | 50 | 2 1.0 |
| Salivary Glands | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Stomach, Forestomach | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Stomach, Glandular
Mineralization | | | | | | | | | | | | | | | | | | | | | | | | 50 | 1 2.0 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Heart
Cardiomyopathy | | | | | | | | | | | | | | | | | | | | | | | | 50 | 18 1.3 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | 50 | 3 1.0 |
| Hypertrophy | | | | | | | | | | | | | | | | | | | | | | | | 15 | 1.2 |
| Vacuolization Cytoplasmic | | | | | | | | | | | | | | | | | | | | | | | | 21 | 1.0 |
| Adrenal Medulla
Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | 49 | 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:
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 CAS Number: TRIMVX

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 Lab: BNW

| WISTAR HAN RATS MALE

100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | |
|---------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------|-------|
| | 07
30 | 07
30 | 07
29 | 05
40 | 07
31 | 07
00 | 07
51 | 07
71 | 07
81 | 07
61 | 07
71 | 07
91 | 06
61 | 07
41 | 07
71 | 07
91 | 04
58 | 07
60 | 07
79 | 04
56 | | 05
39 | 07
29 | 07
70 | 07
36 | 07
07 | | |
| ANIMAL ID | 00626 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | |
| 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 | | | 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 | |

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 X .. Lesion present
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100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|------|
| | 0730 | 0733 | 0732 | 0724 | 0733 | 0738 | 0771 | 0776 | 0777 | 0773 | 0772 | 0762 | 0776 | 0744 | 0774 | 0745 | 0773 | 0767 | 0744 | 0753 | | 0777 | 0773 | 0736 | 0737 |
| 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 |
| Edema | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Artery, Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Germinal Epithelium, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 6 |
| Interstitial Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|--------|
| Bone Marrow | + | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | 8 | |
| Iliac, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1 4.0 |
| Lumbar, Hyperplasia, Lymphoid | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Lumbar, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | 2 | 4 2.5 |
| Renal, Hyperplasia, Plasma Cell | | | | | | | | | | | | | | | | | | | | | | | | | 2 2.5 |
| Lymph Node, Bronchial | + | M | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | I | + | + |
| Hyperplasia, Lymphohistiocytic | | | 3 | 2 | 1 | 2 | | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | | 1 | 2 | | 1 | 2 |
| | | | | | | | | | | | | | | | | | | | | | | | | 42 | 35 1.9 |
| Lymph Node, Mandibular | + | | | | | | | | | | | | | | | | | | | | | | | 48 | |
| Lymph Node, Mediastinal | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + |
| Congestion | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1 2.0 |
| Hyperplasia, Lymphohistiocytic | 3 | | 2 | 2 | 2 | 3 | | 2 | | 3 | 3 | 2 | 3 | | 2 | 3 | 2 | 2 | 3 | | 3 | | 2 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | 43 | 32 2.5 |
| Lymph Node, Mesenteric | + | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| Spleen | + | | | | | | | | | | | | | | | | | | | | | | | 50 | |
| Hematopoietic Cell Proliferation | | | | | | | | | | | | | | | | | | | | | | | | 1 | 8 1.3 |

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|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|
| | 0730 | 0730 | 0729 | 0754 | 0773 | 0775 | 0758 | 0771 | 0773 | 0773 | 0773 | 0766 | 0777 | 0744 | 0777 | 0745 | 0773 | 0766 | 0777 | 0745 | | 0777 |
| ANIMAL ID | 00626 | 00662 | 00662 | 00662 | 00663 | 00663 | 00663 | 00663 | 00663 | 00663 | 00663 | 00666 | 00667 | 00668 | 00669 | 00670 | 00670 | 00670 | 00670 | 00670 | 00670 | 00670 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| 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

| WISTAR HAN RATS MALE
100 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | |
|-----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|--------|-------|------|--|
| | 0730 | 0730 | 0729 | 0754 | 0777 | 0775 | 0757 | 0777 | 0777 | 0777 | 0766 | 0777 | 0744 | 0777 | 0744 | 0755 | 0766 | 0733 | 0722 | 0744 | | 0755 | 0777 | 0777 | 0733 | 0700 | |
| 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 | 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 | | 2 | | 1 | | 9 1.4 | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

*** END OF MALE DATA ***

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

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

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 | 0700 | 0533 | 0733 | 0733 | 0733 | 0733 | 0733 | 0654 | 0533 | 0733 | 0533 | 0533 | 0618 | 0733 | 0639 | 0708 | 0733 | 0606 | 0733 | 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 |

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 + .. 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 | | | | | | | | | | | | | | | | | | | | 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
3
1 | 0
7
3
2 | 0
7
3
3 | 0
6
4
5 | 0
5
3
4 | 0
7
3
2 | 0
5
8
5 | 0
5
4
7 | 0
6
1
8 | 0
7
3
7 | 0
6
9
8 | 0
7
3
3 | | | 0
6
0
6 |
| Pancreas
Hyperplasia
Acinus, Atrophy | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Salivary Glands | | | | | | | | | | | | | | | | | | | | | | | |
| Stomach, Forestomach
Inflammation
Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | |
| Stomach, Glandular | | | | | | | | | | | | | | | | | | | | | | | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | | | | | | | | | | | | | | | | | | | | | | | |
| Heart
Cardiomyopathy | | | | | | | | | | | | | | | | | | | | | | | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Angiectasis
Hematopoietic Cell Proliferation
Hypertrophy
Vacuolization Cytoplasmic | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Medulla
Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | |
| Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | |

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 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

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

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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
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3
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1 | 0
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1 | 0
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1 | 0
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2 | 0
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4 | 0
7
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2 | 0
5
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5 | 0
7
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7 | 0
6
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8 | 0
7
3
7 | 0
6
9
0 | 0
7
0
8 | 0
6
3
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

+ +

Thyroid Gland
C-cell, Hyperplasia
Follicle, Hyperplasia

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland
Fibrosis
Inflammation

+
 1 1 1

Ovary
Cyst

+
 1 1 2 2 4

Uterus
Inflammation, Suppurative
Endometrium, Hyperplasia, Cystic

+
 1 1 1 1 3 1

Vagina

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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 M .. Missing tissue
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 Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------|
| Wistar Han Rats Female
Control | DAY ON TEST | 0732 | 0615 | 0731 | 0772 | 0755 | 0777 | 0777 | 0777 | 0777 | 0766 | 0755 | 0775 | 0755 | 0755 | 0766 | 0777 | 0766 | 0777 | 0766 | 0777 | 0777 | 0777 | females (cont...) |
| | ANIMAL ID | 0010 | 0001 | 0001 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |

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 | | | | | | | | | | | | | | | | | | | | | | | | |
| Lymphoid Follicle, Atrophy | | | | 1 | 1 | 2 | | | 1 | | | | 2 | | 1 | | 1 | | | | | 2 | | |
| Thymus | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + |
| Atrophy | | | | | | | | | | | | | | | | | | | | | | | | |
| Ectopic Thyroid | | | | | 1 | | | | | | | | | | | | | | | | 4 | | | 2 |

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 Lab: BNW

| WISTAR HAN RATS FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|-----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---|-----------|----------------------|--|
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8 | 0
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7 | 0
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8 | 0
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3 | 0
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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 | 0 | |
| | 0 | 0 | 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 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 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 | 1 | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Mammary Gland
Hyperplasia
Duct, Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 | 2 | | |
| Skin
Cyst Epithelial Inclusion
Ulcer | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 | 2 | 2 | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|
| Bone
Osteopetrosis
Joint, Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Skeletal Muscle | | | | | | | + | + | | | | | | | | | | | | | | | | | | | |

NERVOUS SYSTEM

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

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

| 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
3
1 | 0
7
3
2 | 0
6
4
5 | 0
5
3
4 | 0
7
3
2 | 0
5
3
5 | 0
7
8
4 | 0
5
3
7 | 0
6
1
8 | 0
7
3
7 | 0
6
9
0 | 0
7
0
8 | 0
6
3
6 | 0
7
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
0
1 | females
(cont...) | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infiltration Cellular, Histiocyte | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Chronic | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inflammation, Chronic Active | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar Epithelium, Hyperplasia | | | | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolus, Proteinosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
0
1 | females
(cont...) | |
| Inflammation, Suppurative | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Goblet Cell, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | |
| Olfactory Epithelium, Metaplasia, Respiratory | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
0
1 | females
(cont...) | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
0
1 | females
(cont...) |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
1
0
0
1 | females
(cont...) |

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 + .. Tissue examined microscopically
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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

| | | 0 | 0 | 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 | DAY ON TEST | 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 | |
| | | 3 | 1 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 8 | 4 | 1 | 3 | 9 | 0 | 3 | 0 | 3 | 3 | 3 | |
| | | 2 | 5 | 1 | 3 | 2 | 5 | 1 | 1 | 1 | 2 | 3 | 5 | 4 | 2 | 5 | 7 | 8 | 3 | 7 | 8 | 3 | 6 | 3 | 3 | 2 | |
| Control | 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 | |
| | | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |

females
(cont...)

Atrophy
Inflammation
1
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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+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue
M .. Missing tissue
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 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 | 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 |
| | 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 |

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 |

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 + .. Tissue examined microscopically
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| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|------|
| | 0731 | 0733 | 0735 | 0733 | 0733 | 0731 | 0736 | 0733 | 0733 | 0736 | 0738 | 0733 | 0732 | 0734 | 0736 | 0735 | 0737 | 0737 | 0737 | 0737 | 0736 | 0737 | 0735 | 0737 | | 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 | |
| Acinus, Atrophy | | | | | | | | | | | | | | | 2 | | 1 | | | | | | | | 2 | 4 | |
| 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | 1.5 | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Epithelium, Hyperplasia | | | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | |
| 2.0 | | | | | | | | | | | | | | | 2 | | | | | | | | | | | 2 | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Cardiomyopathy | | | 1 | | | | 1 | | | | | | | | | 1 | | 1 | | | | | | | | 7 | |
| 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | 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 |
| Hematopoietic Cell Proliferation | | | 2 | | | | | | | | | | | | | | 2 | | | | | | | | | | 3 |
| Hypertrophy | | | | | | | | | | | 1 | | | | 2 | 2 | | | | | 1 | | 1 | | 3 | 1 | 10 |
| Vacuolization Cytoplasmic | | | | | | | | | | 1 | 1 | | | 2 | | | | | | 1 | | 1 | | | | | 9 |
| 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1.3 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Hyperplasia | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 3 | |
| 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | 1.0 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

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|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|----|--------|
| | 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 | 00147 | | |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | 4 | 1 4.0 |
| Parathyroid Gland Hyperplasia | + | + | + | + | + | + | + | + | + | 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 | 49 | 40 1.4 |
| Follicle, Hyperplasia | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 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 |

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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 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | 001 | |
| | 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 | | | | | | | | | | | | | | | | | | | | | | | | | 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
 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 |
|------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------|
| | 07
31 | 07
33 | 07
35 | 07
33 | 07
31 | 07
36 | 07
33 | 07
33 | 07
36 | 07
38 | 07
32 | 07
34 | 07
36 | 07
38 | 07
32 | 07
34 | 07
36 | 07
38 | 07
32 | 07
34 | 07
36 | 07
38 | 07
32 | 07
34 | |
| Control | 00
11
22
66 | 00
11
22
77 | 00
11
22
88 | 00
11
22
99 | 00
11
33
00 | 00
11
33
11 | 00
11
33
22 | 00
11
33
33 | 00
11
33
44 | 00
11
33
55 | 00
11
33
66 | 00
11
33
77 | 00
11
33
88 | 00
11
33
99 | 00
11
44
00 | 00
11
44
11 | 00
11
44
22 | 00
11
44
33 | 00
11
44
44 | 00
11
44
55 | 00
11
44
66 | 00
11
44
77 | 00
11
44
88 | 00
11
44
99 | |

INTEGUMENTARY SYSTEM

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

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|
| Brain
Compression
Degeneration
Hydrocephalus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 17 | 2.8 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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
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 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
2 | 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 | 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
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|------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------|
| | 0 | 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 |

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 | 28 1.3 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

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(cont...) | | |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0732 | 0734 | 0731 | 0736 | 0737 | 0736 | 0737 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | 0737 | 0737 | | | 0735 | 0734 |
| 10 mg/m3 | 0030 | 0033 | 0033 | 0030 | 0033 | 0033 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | 0030 | |
| | 12 | 23 | 34 | 45 | 56 | 67 | 78 | 89 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 00 | 01 | 02 | 03 | 04 | 05 |

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 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0730 | 0734 | 0739 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | 0737 | 0735 | 0734 | 0735 | 0739 | 0738 | | |
| 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 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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
 + .. 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 | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0730 | 0734 | 0739 | 0733 | 0731 | 0734 | 0733 | 0737 | 0737 | 0737 | 0736 | 0737 | 0736 | 0737 | 0737 | | | 0735 | 0734 | 0735 | 0739 |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pars Distalis, Hyperplasia | | | 2 | | | | 2 | | | 2 | | | | | 1 | | | | | | | 3 | | | 2 | |
| Pars Intermedia, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| 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 | 1 | 1 | |
| Follicle, Hyperplasia | | | | | | 1 | | | | | | | 1 | | | | 2 | | | | | | | | | |
| 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 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. 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 | | | | | | | | | | | | | | | | | | | | | | | | | 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 | | | |
| 10 mg/m3 | 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

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | M | + | M | + | + | + | + | + | + | M | + | M | + | M | + | + | + | + | + | M | + | + | + | + |
| 2 | 2 | | | | 2 | | | | 1 | | | | | | | | | | | | 1 | | | 1 | |

Lymph Node, Mandibular

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Lymph Node, Mediastinal
 Hyperplasia, Lymphohistiocytic

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| 1 | | | | | | | | | | | | | | 1 | | | | | | | 1 | | 2 | 1 | |

Lymph Node, Mesenteric

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Spleen
 Hematopoietic Cell Proliferation
 Lymphoid Follicle, Atrophy

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| 1 | | | | | | | | 1 | | | 1 | | | | 2 | | | | | | 2 | | | 1 | |
| | | | | | | | | | | | | | | | | | | | | | | | | 1 | |

Thymus
 Atrophy
 Cyst

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| 3 | | | | 2 | | | 3 | | 2 | 2 | | | | | 2 | | 2 | | | | | 1 | | 3 | |

INTEGUMENTARY SYSTEM

Mammary Gland
 Duct, Cyst

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | | | | | | | | | 2 | | | 1 | | | | | | | | | | | |

Skin
 Inflammation

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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
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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...) | | | |
|------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|------------------|------------------|------------------|
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Bone +

Skeletal Muscle +

NERVOUS SYSTEM

Brain +

Compression 3 2 3 4 3 3 4 4

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 2 1 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 1 1

Alveolar Epithelium, Hyperplasia 1 1 1 1 1 1 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 1

Alveolar Epithelium, Metaplasia, Squamous 1 1

Alveolus, Proteinosis 1 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
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1-4 .. Lesion qualified as:
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 Lab: BNW

| WISTAR HAN RATS FEMALE
10 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------------|------|
| | 0733 | 0732 | 0731 | 0735 | 0733 | 0732 | 0734 | 0739 | 0733 | 0731 | 0734 | 0733 | 0731 | 0732 | 0733 | 0730 | 0733 | 0732 | 0734 | 0731 | 0733 | 0732 | 0731 | 0735 | 0734 | | | 0735 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000000000000000000000000 | |
| | 3 | 3 | 3 | 5 | 3 | 3 | 0 | 4 | 3 | 3 | 7 | 1 | 3 | 3 | 0 | 3 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 9 | 9 | 000000000000000000000000 | |
| | 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 | 000000000000000000000000 | |
| | 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 | 000000000000000000000000 | |
| Metaplasia, Lipocyte | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| Nephropathy | 2 | | | | | | | | | 2 | | | | 1 | | | | | | | | | 1 | | | | | |
| Pelvis, Inflammation | | 1 | | | | | | | | 1 | 1 | | 1 | 1 | | 1 | | | 2 | 1 | 2 | 1 | 1 | | 1 | 1 | | |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | |
| Renal Tubule, Hyperplasia | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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 X .. Lesion present
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CAS Number: TRIMVX

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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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|-------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS FEMALE | 7 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 5 | 7 | 3 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 10 mg/m3 | 3 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 9 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| ANIMAL ID | 3 | 5 | 8 | 2 | 3 | 3 | 2 | 1 | 2 | 6 | 2 | 6 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 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 |
| | 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 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | 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 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| * TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 | | | | | | | | | | | | | | | | | | 4 | 1.0 | |
| Basophilic Focus | X | | X | X | X | X | X | X | | X | | X | | X | X | X | | | | X | X | | | X | X | | | X | X | | | | | 30 | | |
| Clear Cell Focus | | | | X | X | | | | X | X | | | | X | | X | | | X | | X | | | X | X | | | X | X | | | | | 16 | | |
| Eosinophilic Focus | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | 3 | | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 |
| Inflammation, Granulomatous | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 3 | 1.0 | |
| Mixed Cell Focus | X | | | | | | | | | | | | X | | | | | | | | | X | | | | | | | X | | | | | 5 | | |
| Bile Duct, Dilatation | | | | | | | | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4.0 |
| Bile Duct, Hyperplasia | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 2 | | 8 | 1.1 | |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | |
| 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
 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 | 0732 | 0633 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | 0731 | 0732 | |
| 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 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Sublingual Gland, Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Cardiomyopathy | | | | | | | | | | | | | | | | | | | | | | | | | 7 1.0 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Angiectasis | 1 | | | | | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 2 | 1 | 1 | 2 | 1 | 2 | | 2 | 1 | 25 1.4 |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 1.0 |
| Hypertrophy | | | | | | | | | | | | | | | | | | | | | | | | | 5 1.6 |
| Vacuolization Cytoplasmic | | | 2 | 1 | | | | | | | | | | | | | | | | | | | | | 8 1.4 |
| Zona Fasciculata, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 1.0 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | M | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 43 |

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 X .. Lesion present
 I .. Insufficient tissue
 M .. Missing tissue
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 BLANK .. Not examined microscopically
 1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

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 | | | | |
| Fibrosis | | | | | | | | | | | | | | | | | | | | | | | | 2 | 1.5 | | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| Cyst | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Pars Distalis, Hyperplasia | | | | | | | 1 | 2 | | | | | 2 | | | | | | 1 | 2 | 1 | | | | 13 | 1.7 | |
| Pars Intermedia, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.0 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | | |
| C-cell, Hyperplasia | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | | 2 | | | 2 | 1 | 2 | | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 44 | 1.8 |
| Follicle, Hyperplasia | | | 3 | | | | | | | | | | | | | | | | | | | | | | 4 | 1.8 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | 48 | | |
| Inflammation | | 2 | | | | | | | 1 | | 1 | | 2 | | | 2 | 1 | | | | | 1 | | | | 12 | 1.3 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cyst | | | 2 | | | | 1 | 1 | | | | | | | | 1 | | | | | | | | | | 10 | 1.4 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Cervix, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | 1.0 |
| Endometrium, Hyperplasia, Cystic | | | | 1 | | 2 | 1 | | | 2 | 1 | 1 | | | | 1 | | | | | | | | | | 11 | 1.5 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |

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 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient 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
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 |
| 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
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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
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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 | 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 | 00327 | 00328 | 00329 | 00330 | 00331 | 00332 | 00333 | 00334 | 00335 | 00336 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | | |
| 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 | | 24 | 1.6 |
| Epiglottis, Metaplasia, Squamous | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 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 | 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
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 X .. Lesion present
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Experiment Number: 20523 - 03
 Test Type: CHRONIC
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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 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 | |
| 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 | 46 1.2 |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | | | 1 | 1 | | 1 | 1 | 2 | | | | 1 | 1 | | | 2 | 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 | 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 | 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 | 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 |

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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 Female | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---------------------------|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|--|----------|
| | 07 | 06 | 06 | 07 | 06 | 07 | 07 | 07 | 07 | 07 | 05 | 07 | 03 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 05 | 07 | 07 | | | |
| 10 mg/m3 | 33 | 35 | 38 | 32 | 33 | 33 | 21 | 22 | 26 | 22 | 26 | 22 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | | | |
| ANIMAL ID | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | | |
| | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | | | |
| | 22 | 22 | 22 | 22 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | | | |
| | 67 | 78 | 89 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 00 | | | |
| 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 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|
| | 0604 | 0732 | 0684 | 0664 | 0666 | 0571 | 0757 | 0575 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | | | 0777 |
| 30 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 | 00501 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00502 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00503 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00504 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00505 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00506 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00507 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00508 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00509 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00510 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00511 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00512 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00513 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00514 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00515 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00516 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00517 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00518 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00519 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00520 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00521 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00522 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00523 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00524 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00525 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis | | | | | | | | | | | | | | | | | | | | | | | | | |
| Basophilic Focus | | X | | 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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bile Duct, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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
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| 30 mg/m3 | 0
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4 | 0
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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

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...) |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|
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| 30 mg/m3 | 0
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | |
| Thymus
Atrophy
Cyst
Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | 2 | | | | | | 2 | | 1 | 1 | 1 | | 4 | 2 | 1 | | 2 | 2 | 1 | 4 | | | | | | | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland
Hyperplasia
Duct, Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | 2 | | | | 2 | | | | | | | | 2 | | | | | | | | | 1 | | | | | | | |
| Skin
Cyst Epithelial Inclusion
Inflammation
Ulcer | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | | | | | 2 | | | | | | 3 | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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 + .. 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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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Metal working fluids (Trim VX)
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Date Report Requested: 10/29/2014
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 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|
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| 30 mg/m3 | 0
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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 | 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 | 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 | 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 | 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 | 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 | 2 |
| 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 | 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
 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 | WISTAR HAN RATS FEMALE | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------|-------|
| | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0604 | 0732 | 0684 | 0664 | 0662 | 0516 | 0733 | 0579 | 0733 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0683 | 0733 | 0773 | 0773 | 0773 | 0773 | females
(cont...) | |
| 30 mg/m3 | 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 |
| Inflammation, Suppurative | 2 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Glands, Olfactory Epithelium, Hyperplasia | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Glands, Olfactory Epithelium, Hyperplasia, Squamous | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| Goblet Cell, Hyperplasia | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 2 | 1 |
| 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 | 3 | 4 | 3 | 3 | 3 |
| 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 | 1 | 1 |
| Respiratory Epithelium, Hyperplasia | | | | | 1 | | | 1 | 1 | | | | | | | | | 1 | | | | | | | | |
| Transitional Epithelium, Hyperplasia | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Cataract | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Inflammation | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Nephropathy | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | |
| Pelvis, Inflammation | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 2 | 1 | | 1 | 1 | 1 | 1 | 2 | | 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 | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|------------------------|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------------------|
| | 06 | 07 | 06 | 06 | 06 | 05 | 07 | 05 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 07 | 06 | 07 | 07 | 07 | 07 | | |
| 30 mg/m3 | 04 | 03 | 08 | 04 | 02 | 01 | 03 | 09 | 03 | 03 | 03 | 03 | 03 | 03 | 03 | 03 | 03 | 03 | 03 | 08 | 03 | 03 | 03 | 03 | |
| | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | |
| | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | 05 | |
| | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 02 | 02 | 02 | 02 | 02 | |
| | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | |

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
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 | 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
 + .. Tissue examined microscopically
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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 | 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 | | | |
| 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 | |

* .. 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 | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0672 | 0773 | 0773 | 0673 | 0773 | 0676 | 0666 | 0566 | 0677 | 0393 | 0688 | 0666 | 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 | 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
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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
30 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---|----|-----|-----|
| | 0
7
3
3 | 0
7
3
3 | 0
7
3
2 | 0
7
3
3 | 0
7
3
1 | 0
7
3
3 | 0
6
7
3 | 0
7
7
2 | 0
7
3
3 | 0
7
3
3 | 0
6
7
3 | 0
7
7
2 | 0
6
6
8 | 0
5
6
1 | 0
6
7
7 | 0
7
3
2 | 0
5
6
3 | 0
6
6
8 | 0
7
3
3 | 0
7
3
2 | | 0
7
3
3 | 0
7
3
2 | 0
7
3
1 | | | | | | | |
| ANIMAL ID | 0
5
2
6 | 0
5
2
7 | 0
5
2
8 | 0
5
2
9 | 0
5
3
0 | 0
5
3
1 | 0
5
3
2 | 0
5
3
3 | 0
5
3
3 | 0
5
3
3 | 0
5
3
4 | 0
5
3
5 | 0
5
3
6 | 0
5
3
7 | 0
5
3
8 | 0
5
4
9 | 0
5
4
0 | 0
5
4
1 | 0
5
4
2 | 0
5
4
3 | 0
5
4
4 | 0
5
4
5 | 0
5
4
6 | 0
5
4
7 | 0
5
4
8 | 0
5
4
9 | 0
5
4
0 | | | | |
| Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | 46 | | |
| | | | 2 | | | | 1 | 1 | 1 | 2 | | | | 1 | | | | | 2 | | | | | | | | 1 | | 14 | 1.6 | |
| | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | 1 | 2.0 | |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Spleen
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| | | | | | | | 1 | 1 | | | 1 | | | | | | 1 | 2 | | | | | | | | | | | 11 | 1.2 | |
| | | | | | | | | | | | | | | | 2 | | | | | | | 2 | | | | | 1 | | 6 | 1.3 | |
| Thymus
Atrophy
Cyst
Hyperplasia, Lymphohistiocytic | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | | |
| | | | | | 2 | 2 | | | 4 | 4 | 2 | | | 4 | | 1 | | | | 2 | 4 | | | | | | | | 21 | 2.3 | |
| | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2.0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 2.3 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland
Hyperplasia
Duct, Cyst | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1.5 |
| | | | | | | | | | 1 | | | | | | | | 2 | 2 | | | | | | | | | 1 | | 6 | 1.7 | |
| Skin
Cyst Epithelial Inclusion
Inflammation
Ulcer | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2.0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 2.3 |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 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 | | | | |
|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0672 | 0773 | 0773 | 0673 | 0773 | 0676 | 0666 | 0566 | 0677 | 0566 | 0666 | 0666 | 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 | | 4 | | | | | 3 | | 3 | 2 | 2 | 3 | 21 | 2.6 |
| Hydrocephalus | | | | | | | | | | | | | | 4 | | | | | | | | | | 1 | 4 | 3.0 |
| Peripheral Nerve | | | | | | | | | | | | | | | | | | | | | | | | 2 | | |
| Spinal Cord | | | | | | | | | | | | | | | | | | | | | | | | 2 | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|-----|
| Larynx | + | | | | | | | | | | | | | | | | | | | | | | | 50 | | | |
| Infiltration Cellular, Mixed Cell | | 1 | | | 1 | 1 | 1 | | | | 1 | 1 | | | | | 2 | 1 | | | | | 2 | 1 | 18 | 1.1 | |
| Epiglottis, Hyperplasia, Squamous | 1 | | | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | | 1 | 2 | 1 | 1 | | | | | 1 | 2 | 41 | 1.4 | |
| 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 | 50 | 2.2 | |
| 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 | 2 | 49 | 1.5 |
| 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 | 50 | 1.8 | |
| 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 | 50 | 2.0 | |
| Alveolar/bronchiolar Epithelium, Hyperplasia | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | | | | | | 1 | | 2 | 1 | 1 | 1 | | 2 | 1 | 31 | 1.4 | |
| 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 | 2 | 1 | 49 | 2.0 |
| Alveolar Epithelium, Metaplasia, Squamous | | | | | 2 | 2 | | | 2 | | | | | | | | | | | | | | | | 9 | 1.3 | |
| Alveolus, Proteinosis | | | 1 | | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | | 1 | 1 | 1 | 1 | | 2 | 41 | 1.4 | |
| Bronchus-associated Lymphoid Tissue, Hyperplasia, Lymphohistiocytic | | | | | | | | | | | | 1 | | | | | | | | 1 | 1 | | | | 7 | 1.0 | |
| 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
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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 | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|------|-----------|------------|------------|
| | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0763 | 0773 | 0773 | 0763 | 0773 | 0763 | 0766 | 0756 | 0766 | 0773 | 0756 | 0766 | 0766 | 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 | | | | |
| 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:
 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 | 0733 | 0733 | 0732 | 0733 | 0731 | 0733 | 0672 | 0773 | 0773 | 0673 | 0773 | 0673 | 0676 | 0561 | 0673 | 0739 | 0688 | 0661 | 0733 | 0773 | 0773 | 0773 | 0773 | * TOTALS | |
| | 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 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 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
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 BLANK .. Not examined microscopically

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 1) Minimal 3) Moderate
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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

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | females
(cont...) | | | |
|-------------------------------|------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|---|---|---|
| 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 | |
| | | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | | 7 | 7 | 6 |
| | 100 mg/m3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 5 | 3 |
| | 3 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 6 | 3 | 2 | 2 | 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 |
| | 0 | 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 | 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 |

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 | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

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

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

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 | | | | |
| WISTAR HAN RATS FEMALE | | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 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 | 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 | 6 | 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 | | |
| | | 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 | |

Parathyroid Gland

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

Pituitary Gland

+ +

Angiectasis

Pars Distalis, Hyperplasia

1 2 2 1 1 2 1 1 1 1

Thyroid Gland

+ +

C-cell, Hyperplasia

Follicle, Hyperplasia

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland

+ +

Cyst

2

Inflammation

3 1 1 2 1 2 1 1

Ovary

+ +

Cyst

1 1 1 1 1

Uterus

+ +

Thrombosis

3

Endometrium, Hyperplasia, Cystic

3 1 1 1 2 1

Epithelium, Metaplasia, Squamous

4

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:

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| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS FEMALE
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 | 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 |
| | | 6 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 6 |
| | | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 5 | 3 | 3 |
| | 3 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 6 | 3 | 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 | |
| | 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 | 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 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

females
(cont...)

Bone Marrow

+ +

Lymph Node

Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic

+ + I + + + + + M + + M + M + + + + M + + + M + M M
2 2 2 3 2 2 1 1 1 1 2 2 1 1 2 2 1 1 2 2 2 2 2 2 2

Lymph Node, Mandibular
Hyperplasia, Plasma Cell

+
3

Lymph Node, Mediastinal
Hyperplasia, Lymphohistiocytic
Hyperplasia, Plasma Cell
Pigmentation, Hemosiderin

+ + + + + + + + + M + + + + M + + + + + + + + + + + + + +
2 2 4 3 3 1 3 2 3 1 2 4 4 2 2 2 1

Lymph Node, Mesenteric
Hyperplasia, Plasma Cell

+
3

Spleen
Cyst
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy

+
1 1 1 2 1 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
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X .. Lesion present
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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

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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...) |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Fibrosis | 1 | 1 | 1 | 2 | 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 | 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 | 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 | 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 | 4 | 3 | 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 | 1 | | |
| Transitional Epithelium, Metaplasia, Squamous | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cataract | | | 3 | | | | | | | | | | | | | | | | | | | | | | |
| Retina, Atrophy | | | 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
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Experiment Number: 20523 - 03
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 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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 Lab: BNW

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

Harderian Gland Inflammation + 1

Zymbal's Gland

URINARY SYSTEM

Kidney +

Hydronephrosis

Nephropathy 1 1 1 2 1 1 1 1 1 1 1 1 2 1 1 1 1 1

Pelvis, Inflammation 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1

Renal Tubule, Cyst 2 2 1

Ureter

Cyst

Urinary Bladder +

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 + .. Tissue examined microscopically M .. Missing tissue
 X .. Lesion present A .. Autolysis precludes evaluation
 I .. Insufficient tissue BLANK .. Not examined microscopically
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 Lab: BNW

| WISTAR HAN RATS FEMALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0737 | 0733 | 0733 | 0733 | 0734 | 0733 | 0733 | 0732 | 0734 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0737 | 0736 | 0736 | |
| 100 mg/m3 | 0026 | 0077 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0000 | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | |
| ANIMAL ID | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0737 | 0733 | 0733 | 0733 | 0734 | 0733 | 0733 | 0732 | 0734 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0737 | 0736 | 0736 | |

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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fat, Necrosis | | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 4 1.3 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

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|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0735 | 0733 | 0733 | 0733 | 0734 | 0733 | 0735 | 0736 | 0735 | 0734 | 0737 | 0736 | 0736 | 0737 | 0737 | 0737 | 0737 | 0736 | |
| 100 mg/m3 | 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 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|-----|
| 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 | 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 | 2.0 |
| Islets, Pancreatic | + | | | | | | | | | | | | | | | | | | | | | | | | 50 | |

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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 | 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
 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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| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node | | | | + | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial
Hyperplasia, Lymphohistiocytic | + | + | + | + | + | + | M | M | + | M | + | + | + | + | + | + | M | + | + | + | + | M | M | + | + | 36 | 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 | 28 2.2
1 4.0
1 2.0 |
| Lymph Node, Mesenteric
Hyperplasia, Plasma Cell | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 3.0 |
| Spleen
Cyst
Hematopoietic Cell Proliferation
Lymphoid Follicle, Atrophy | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 1.0
9 1.2
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 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 2 3 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | 2.7 | | | | | | | | |
| Lung | + | | | | | | | | | | | | | | | | | | | | | | | | | | 50 | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------|--------|
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| 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 50 1.5 | | |
| Respiratory Epithelium, Hyperplasia | 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 | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Cataract | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Retina, Atrophy | | | | | | | | | | | | | | | | | | | | | | | | | 1 3.0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 2 2.0 |

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|-------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|--------|
| | 0733 | 0732 | 0733 | 0731 | 0732 | 0736 | 0735 | 0733 | 0733 | 0733 | 0734 | 0733 | 0735 | 0736 | 0735 | 0737 | 0736 | 0736 | 0737 | 0737 | | 0737 | 0736 | 0736 | 0735 | 0732 | 0736 |
| 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 |
| Harderian Gland Inflammation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 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 | | | | | | 1 | 1 | | 1 | | 1 | | | | | | 1 | 1 | 1 | | | 1 | 30 1.1 |
| Renal Tubule, Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 1.7 |
| Ureter Cyst | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 2.0 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

*** END OF REPORT ***

* .. 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