Final 1_Core Only

NTP Study Number:	C20614B		
Lock Date:	01/10/2012		
Cage Range:	ALL		
Date Range:	ALL		
Reasons For Removal:	25021 TSAC	25020 NATD	25019 MSAC
Removal Date Range:	ALL		
Treatment Groups:	Include ALL		
Study Gender:	Male		
TDMSE Version:	3.0.2.3_002		
PWG Approval Date:	07/24/2018		

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Disposition Summary						
Animals Initially In Study	**60**	**60**	**60**	**60**	**60**	**60**
Early Deaths						
Moribund Sacrifice	**7**	**9**	**6**	**8**	**8**	**6**
Natural Death	**7**	**6**	**2**	**4**	**7**	**6**
Survivors						
Natural Death		**1**			**1**	
Terminal Sacrifice	**36**	**34**	**42**	**38**	**34**	**38**
Animals Examined Microscopically	**50**	**50**	**50**	**50**	**50**	**50**
ALIMENTARY SYSTEM						
Esophagus	(50)	(50)	(50)	(50)	(50)	(50)
Intestine Large, Cecum	(49)	(50)	(50)	(50)	(50)	(50)
Erosion		1 [1.0]				
Inflammation		1 [1.0]				1 [2.0]
Intestine Large, Colon	(49)	(50)	(50)	(50)	(50)	(50)
Parasite Metazoan	7	8	10	5	12	10
Intestine Large, Rectum	(50)	(50)	(50)	(50)	(50)	(50)
Intestine Small, Duodenum	(50)	(50)	(50)	(50)	(50)	(50)
Epithelium, Muscularis, Inflammation, Chronic Active						
Intestine Small, Ileum	(49)	(50)	(50)	(50)	(50)	(50)
Inflammation			1 [4.0]			
Ulcer			1 [4.0]			
Intestine Small, Jejunum	(49)	(50)	(50)	(50)	(50)	(50)
Liver	(50)	(50)	(50)	(50)	(50)	(50)
Amyloid Deposition						1 [2.0]
Angiectasis			1 [1.0]			
Basophilic Focus	1			1	2	1
Cholangiofibrosis			1 [3.0]	1 [3.0]		
Clear Cell Focus	35	35	37	38	33	33
Cytoplasmic Alteration						
Degeneration, Cystic	2 [1.0]		5 [1.2]	3 [1.0]	7 [1.0]	3 [1.0]
Eosinophilic Focus	3	2	6	5	5	1

a - Number of animals examined microscopically at site and number of animals with lesion
b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Extramedullary Hematopoiesis	1 [1.0]	2 [1.0]	2 [1.0]		4 [1.0]	
Fatty Change			1 [2.0]	1 [2.0]	2 [1.5]	
Fatty Change, Focal					3 [1.0]	1 [1.0]
Fatty Change, Diffuse					1 [3.0]	
Hepatodiaphragmatic Nodule	1			1		
Inflammation, Focal	15 [1.0]	13 [1.0]	19 [1.0]	11 [1.0]	18 [1.1]	19 [1.1]
Inflammation, Chronic Active	1 [1.0]					
Mixed Cell Focus			4	4	9	4
Necrosis	2 [1.5]	1 [1.0]	17 [1.2]	11 [1.2]	23 [1.4]	14 [1.1]
Pigment			7 [1.4]	4 [1.3]	15 [1.1]	11 [1.4]
Arteriole, Necrosis					1 [1.0]	
Bile Duct, Cyst		1				
Bile Duct, Dilation				1 [3.0]		
Bile Duct, Hyperplasia	24 [1.1]	25 [1.2]	3 [1.0]	8 [1.0]	3 [1.0]	2 [1.0]
Endothelial Cell, Hypertrophy, Diffuse		1 [3.0]				
Hepatocyte, Cytoplasmic Alteration			12 [1.5]	4 [1.0]	34 [1.6]	29 [1.4]
Hepatocyte, Hyperplasia, Nodular						
Hepatocyte, Hypertrophy		1 [4.0]	13 [1.2]	4 [1.0]	34 [1.2]	29 [1.4]
Hepatocyte, Single Cell Death	1 [1.0]	1 [4.0]	1 [1.0]	3 [2.7]	11 [1.7]	5 [1.6]
Kupffer Cell, Hyperplasia				1 [1.0]		
Mesentery	(0)	(0)	(1)	(2)	(0)	(0)
Fat, Necrosis				1 [2.0]		
Pancreas	(50)	(50)	(50)	(50)	(50)	(50)
Basophilic Focus					1	
Hemorrhage		1 [4.0]				
Inflammation		1 [1.0]				1 [2.0]
Inflammation, Chronic Active		1 [2.0]	4 [1.5]		2 [1.0]	5 [1.6]
Acinus, Atrophy	13 [1.1]	9 [1.4]	10 [1.3]	13 [1.2]	12 [1.3]	14 [1.4]
Acinus, Hyperplasia	18 [2.7]	23 [2.7]	32 [3.7]	27 [3.2]	37 [3.2]	38 [3.3]
Duct, Degeneration, Mucoid						1 [2.0]
Duct, Inflammation, Chronic Active						
Salivary Glands	(49)	(50)	(50)	(50)	(50)	(50)
Atrophy	2 [1.5]					
Stomach, Forestomach	(50)	(50)	(50)	(50)	(50)	(50)
Inflammation	3 [2.0]	4 [2.0]	4 [1.8]	4 [2.3]	1 [3.0]	3 [2.3]
Mineral						

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b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Perforation						1
Ulcer	1 [4.0]		1 [1.0]	2 [2.5]		1 [4.0]
Epithelium, Erosion		2 [1.0]		1 [1.0]		
Epithelium, Hyperplasia, Basal Cell						1 [3.0]
Epithelium, Hyperplasia, Squamous	5 [2.0]	6 [2.0]	3 [2.3]	2 [3.0]	2 [2.5]	2 [2.0]
Stomach, Glandular	(50)	(50)	(50)	(50)	(50)	(50)
Erosion						
Inflammation						
Metaplasia, Atypical			1 [1.0]			
Mineral	1 [2.0]			2 [1.5]		1 [3.0]
Epithelium, Metaplasia, Squamous						
Glands, Hyperplasia, Atypical, Focal				1 [3.0]		
Glands, Necrosis			1 [1.0]			
CARDIOVASCULAR SYSTEM						
Blood Vessel	(50)	(50)	(50)	(50)	(50)	(50)
Inflammation	5 [1.8]	5 [1.6]	2 [1.5]	5 [2.2]	2 [1.5]	2 [1.5]
Inflammation, Chronic	4 [2.0]	9 [1.6]	5 [1.6]	6 [1.8]	4 [2.0]	5 [2.2]
Mineral	1 [2.0]	1 [3.0]	2 [1.0]	1 [1.0]	4 [1.0]	2 [1.0]
Adventitia, Aorta, Hemorrhage						1 [2.0]
Aorta, Mineral	1 [1.0]		1 [1.0]	3 [1.0]	1 [1.0]	
Aorta, Pulmonary Artery, Mineral			1 [1.0]		1 [1.0]	1 [1.0]
Aorta, Pulmonary Vein, Mineral						1 [1.0]
Pulmonary Artery, Mineral			2 [1.0]		1 [1.0]	1 [1.0]
Pulmonary Vein, Mineral			1 [1.0]			
Pulmonary Vein, Thrombus						
Heart	(50)	(50)	(50)	(50)	(50)	(50)
Cardiomyopathy	29 [1.5]	33 [1.4]	32 [1.4]	32 [1.5]	28 [1.3]	24 [1.5]
Metaplasia, Osseous				1 [2.0]		
Mineral		1 [1.0]		1 [1.0]	2 [1.0]	
Necrosis					1 [1.0]	
Atrium, Fibrosis		1 [2.0]				
Coronary Artery, Mineral						
Endocardium, Hyperplasia		1 [1.0]				

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b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Endocardium, Ventricle, Inflammation						
Myocardium, Hemorrhage		1 [2.0]		1 [1.0]		
Myocardium, Inflammation	1 [2.0]					
Schwann Cell, Hyperplasia	1 [1.0]					
Valve, Degeneration			1 [2.0]			
Valve, Thrombus						
ENDOCRINE SYSTEM						
Adrenal Cortex	(50)	(50)	(50)	(50)	(50)	(50)
Cyst		1				
Degeneration, Cystic	5 [1.0]	12 [1.0]	2 [1.0]	5 [1.0]	4 [1.0]	3 [1.0]
Hyperplasia, Focal						1 [3.0]
Hypertrophy	18 [1.3]	23 [1.0]	24 [1.1]	24 [1.2]	15 [1.0]	20 [1.0]
Necrosis		1 [1.0]				
Thrombus						1 [1.0]
Zona Fasciculata, Hyperplasia	2 [1.0]	6 [1.3]	5 [1.2]	2 [2.0]	2 [1.0]	4 [1.3]
Adrenal Medulla	(50)	(50)	(50)	(50)	(50)	(50)
Hyperplasia	13 [1.7]	6 [2.2]	5 [2.8]	3 [2.3]	5 [2.2]	5 [1.4]
Islets, Pancreatic	(50)	(50)	(50)	(50)	(50)	(50)
Hyperplasia	3 [1.7]	2 [1.0]	6 [1.5]	2 [2.5]	6 [2.0]	8 [1.4]
Metaplasia, Hepatocyte				1 [1.0]	1 [2.0]	1 [1.0]
Parathyroid Gland	(41)	(46)	(44)	(39)	(38)	(40)
Hyperplasia	2 [2.5]	3 [2.7]	1 [2.0]		1 [2.0]	1 [1.0]
Hyperplasia, Focal						1 [1.0]
Pituitary Gland	(50)	(50)	(50)	(50)	(50)	(50)
Cyst				1		
Hemorrhage						1 [4.0]
Pars Distalis, Hyperplasia	23 [2.3]	16 [1.9]	19 [1.5]	14 [1.8]	24 [1.6]	17 [1.8]
Pars Distalis, Pars Intermedia, Hyperplasia						
Pars Intermedia, Hypertrophy	1 [3.0]					
Rathke's Cleft, Hyperplasia		1 [1.0]			1 [1.0]	
Thyroid Gland	(49)	(50)	(50)	(50)	(50)	(50)
C-cell, Hyperplasia	11 [2.5]	11 [2.5]	12 [2.0]	12 [2.3]	8 [2.0]	10 [1.8]
Follicular Cell, Hyperplasia					1 [1.0]	2 [1.0]

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b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Follicular Cell, Hypertrophy	8 [1.5]	12 [1.8]	12 [1.5]	7 [2.6]	7 [2.1]	9 [2.1]
GENERAL BODY SYSTEM						
None						
GENITAL SYSTEM						
Epididymis	(50)	(50)	(50)	(50)	(50)	(49)
Preputial Gland	(50)	(50)	(50)	(50)	(50)	(49)
Inflammation	1 [3.0]				1 [4.0]	1 [4.0]
Duct, Hyperplasia				1 [2.0]		
Prostate	(50)	(50)	(50)	(50)	(50)	(50)
Inflammation					2 [1.0]	
Dorsal, Inflammation, Chronic Active			1 [2.0]		1 [1.0]	
Dorsal, Lateral, Inflammation, Chronic Active						
Epithelium, Ventral, Hyperplasia	5 [1.0]	2 [1.0]	2 [1.0]	3 [1.0]	2 [1.0]	5 [1.0]
Lateral, Inflammation, Chronic Active				2 [1.0]		1 [1.0]
Ventral, Inflammation, Chronic						
Ventral, Inflammation, Chronic Active	4 [1.0]	6 [1.3]	3 [1.3]	3 [1.0]	8 [1.8]	10 [1.7]
Seminal Vesicle	(50)	(50)	(50)	(50)	(50)	(50)
Hyperplasia		1 [1.0]				
Inflammation		3 [1.3]		1 [2.0]		
Testes	(50)	(50)	(50)	(50)	(50)	(49)
Edema	2 [3.0]		1 [4.0]			
Bilateral, Germinal Epithelium, Degeneration	6 [2.8]	9 [2.3]	3 [2.3]	4 [1.5]	4 [1.8]	4 [3.5]
Germinal Epithelium, Degeneration	8 [1.8]	4 [1.8]	3 [2.3]	5 [2.0]	7 [2.4]	6 [1.5]
Interstitial Cell, Hyperplasia	1 [2.0]	2 [2.0]	1 [1.0]			
HEMATOPOIETIC SYSTEM						
Bone Marrow	(50)	(50)	(50)	(50)	(50)	(50)
Hyperplasia	4 [3.0]	6 [3.2]	9 [3.0]	9 [2.6]	4 [3.0]	8 [2.9]
Myelofibrosis					1 [1.0]	

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Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Lymph Node	(3)	(3)	(3)	(3)	(3)	(3)
Deep Cervical, Inflammation, Granulomatous	1 [3.0]					
Mediastinal, Hemorrhage		1 [2.0]		1 [2.0]		
Mediastinal, Hyperplasia, Lymphoid	1 [1.0]				1 [3.0]	
Mediastinal, Infiltration Cellular, Histiocyte			1 [2.0]			
Mediastinal, Infiltration Cellular, Plasma Cell					1 [2.0]	
Mediastinal, Pigment						1 [2.0]
Pancreatic, Ectasia			1 [3.0]			
Pancreatic, Pigment						1 [2.0]
Lymph Node, Mandibular	(49)	(50)	(50)	(50)	(50)	(50)
Atrophy		3 [1.0]			1 [1.0]	2 [2.5]
Ectasia	3 [2.0]				1 [2.0]	
Hemorrhage		1 [2.0]				
Hyperplasia, Lymphoid	2 [2.5]	2 [2.0]	2 [1.5]			1 [2.0]
Infiltration Cellular, Plasma Cell	2 [2.0]	3 [1.7]	2 [1.5]	1 [3.0]		2 [2.5]
Lymph Node, Mesenteric	(49)	(50)	(50)	(50)	(50)	(50)
Atrophy		1 [3.0]			1 [2.0]	1 [3.0]
Hyperplasia, Lymphoid	1 [2.0]					1 [2.0]
Spleen	(50)	(50)	(50)	(50)	(50)	(50)
Extramedullary Hematopoiesis	37 [1.6]	40 [1.6]	45 [1.7]	40 [1.6]	38 [1.5]	40 [1.5]
Hemorrhage				1 [4.0]		
Infarct					1 [1.0]	
Pigment	30 [1.2]	34 [1.0]	42 [1.0]	33 [1.0]	31 [1.1]	39 [1.1]
Capsule, Cyst					1	
Lymphoid Follicle, Atrophy	3 [3.0]	6 [1.8]	2 [2.5]	2 [2.0]	4 [2.8]	8 [1.9]
Lymphoid Follicle, Hyperplasia		1 [2.0]	1 [1.0]	1 [1.0]	1 [1.0]	
Thymus	(48)	(48)	(46)	(49)	(48)	(47)
Atrophy	45 [2.5]	45 [2.9]	45 [2.9]	48 [2.8]	47 [2.7]	46 [2.9]
Hyperplasia, Lymphoid		1 [4.0]		1 [2.0]		
Epithelial Cell, Hyperplasia, Tubular		2 [2.5]				
INTEGUMENTARY SYSTEM						
Mammary Gland	(50)	(50)	(49)	(50)	(50)	(50)
Skin	(50)	(50)	(50)	(50)	(50)	(50)

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Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Cyst Epithelial Inclusion	1			2		
Foreign Body	2					
Hyperkeratosis						
Inflammation	4 [3.8]			3 [3.0]	1 [2.0]	1 [1.0]
Inflammation, Suppurative						1 [4.0]
Ulcer	1 [3.0]			1 [4.0]		
Epidermis, Hyperplasia	1 [2.0]		1 [4.0]			1 [2.0]
Hair Follicle, Hyperplasia		1 [3.0]				
MUSCULOSKELETAL SYSTEM						
Bone	(50)	(50)	(50)	(50)	(50)	(50)
Hyperostosis	1 [2.0]					
Osteopetrosis			1 [2.0]		1 [1.0]	
Joint, Arthrosis		1 [4.0]		1 [4.0]		
Skeletal Muscle	(2)	(1)	(1)	(1)	(1)	(0)
NERVOUS SYSTEM						
Brain	(50)	(50)	(50)	(50)	(50)	(50)
Compression	1 [1.0]					
Gliosis, Focal	1 [1.0]					
Inflammation						
Necrosis	2 [2.5]	2 [3.0]		1 [2.0]	2 [3.5]	1 [1.0]
Cerebrum, Edema						
Peripheral Nerve	(0)	(0)	(0)	(1)	(1)	(0)
Axon, Degeneration				1 [2.0]	1 [1.0]	
Spinal Cord	(0)	(0)	(0)	(1)	(1)	(0)
Nerve, Degeneration				1 [2.0]	1 [2.0]	
RESPIRATORY SYSTEM						
Larynx	(1)	(0)	(0)	(0)	(0)	(0)
Lung	(50)	(50)	(50)	(50)	(50)	(50)

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Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Foreign Body	1	2			2	
Infiltration Cellular, Histiocyte	23 [1.7]	17 [1.9]	28 [2.2]	21 [2.0]	25 [2.2]	25 [2.3]
Infiltration Cellular, Lymphocyte			1 [2.0]			
Inflammation, Granulomatous, Multifocal	7 [1.3]	5 [1.8]	5 [1.0]	11 [1.0]	2 [1.0]	3 [1.0]
Inflammation, Acute		1 [3.0]	1 [2.0]		3 [2.7]	
Inflammation, Chronic Active	5 [1.4]	4 [1.5]	4 [1.8]	2 [1.0]	5 [1.4]	5 [1.0]
Alveolar Epithelium, Hyperplasia	1 [4.0]	1 [2.0]	2 [2.5]	4 [1.5]	2 [1.5]	2 [1.0]
Alveolar Epithelium, Hypertrophy	1 [1.0]		1 [3.0]		1 [1.0]	
Serosa, Fibrosis, Multifocal		1 [1.0]				
Nose	(50)	(50)	(50)	(50)	(50)	(50)
Glands, Olfactory Epithelium, Inflammation		1 [1.0]			1 [1.0]	
Glands, Respiratory Epithelium, Hyperplasia		1 [1.0]				
Glands, Respiratory Epithelium, Inflammation		2 [1.0]	3 [1.0]		2 [1.0]	8 [1.0]
Nasolacrimal Duct, Inflammation					1 [1.0]	
Olfactory Epithelium, Accumulation, Hyaline Droplet	40 [1.8]	45 [2.3]	44 [2.3]	49 [2.4]	42 [2.3]	44 [2.4]
Olfactory Epithelium, Inflammation	1 [1.0]			1 [1.0]		
Olfactory Epithelium, Metaplasia				1 [1.0]		
Olfactory Epithelium, Necrosis						1 [2.0]
Olfactory Epithelium, Respiratory Epithelium, Inflammation	1 [4.0]				2 [4.0]	1 [3.0]
Respiratory Epithelium, Inflammation	4 [1.3]	3 [1.7]	3 [1.0]	6 [1.5]	1 [1.0]	4 [1.0]
Respiratory Epithelium, Metaplasia		2 [1.0]				
Respiratory Epithelium, Metaplasia, Mucous					1 [1.0]	
Trachea	(50)	(50)	(50)	(50)	(50)	(50)
SPECIAL SENSES SYSTEM						
Eye	(50)	(50)	(50)	(50)	(50)	(50)
Phthisis Bulbi			1			
Anterior Chamber, Cornea, Inflammation						
Anterior Chamber, Cornea, Iris, Inflammation		1 [4.0]				
Cornea, Inflammation		1 [3.0]	3 [2.0]	3 [1.3]	1 [2.0]	2 [2.0]
Retina, Degeneration	3 [1.0]	4 [1.8]	3 [1.0]		2 [1.0]	4 [1.0]
Retina, Gliosis, Focal					1 [1.0]	
Retina, Inflammation	1 [1.0]					

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b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/0 ppm	300/0 ppm	0/20 ppm	300/20 ppm	0/40 ppm	300/40 ppm
Harderian Gland	(50)	(50)	(50)	(50)	(50)	(50)
Hyperplasia	2 [1.5]	1 [1.0]				
Metaplasia					1 [2.0]	
Necrosis						
Lacrimal Gland	(1)	(0)	(0)	(0)	(0)	(0)
Zymbal's Gland	(0)	(0)	(0)	(1)	(0)	(0)
URINARY SYSTEM						
Kidney	(50)	(50)	(50)	(50)	(50)	(50)
Accumulation, Hyaline Droplet			2 [2.5]	1 [2.0]		
Infarct	1 [1.0]	2 [1.5]	5 [1.0]	2 [1.0]	3 [1.0]	4 [1.3]
Mineral	1 [2.0]			1 [2.0]	3 [1.7]	
Nephropathy, Chronic Progressive	48 [2.5]	48 [2.8]	49 [2.2]	49 [2.4]	47 [2.0]	48 [2.4]
Cortex, Cyst	1	3	1	1	2	1
Cortex, Inflammation						
Papilla, Necrosis					1 [1.0]	
Papilla, Urothelium, Hyperplasia	2 [1.0]	3 [1.0]	3 [1.0]	2 [1.0]	1 [1.0]	1 [1.0]
Pelvis, Dilation		1 [2.0]				
Pelvis, Inflammation		1 [2.0]			1 [1.0]	
Renal Tubule, Necrosis		1 [1.0]		1 [3.0]	1 [1.0]	1 [3.0]
Urinary Bladder	(49)	(50)	(50)	(50)	(50)	(50)
Hemorrhage					1 [4.0]	
Infiltration Cellular, Mast Cell				1 [1.0]		
Inflammation					1 [1.0]	

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b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm

Disposition Summary

Animals Initially In Study	**60**	**60**
Early Deaths		
Moribund Sacrifice	**3**	**4**
Natural Death	**10**	**7**
Survivors		
Natural Death	**1**	
Terminal Sacrifice	**36**	**39**
Animals Examined Microscopically	**50**	**50**

ALIMENTARY SYSTEM

Esophagus	(50)	(50)
Intestine Large, Cecum	(50)	(50)
Erosion		
Inflammation		
Intestine Large, Colon	(50)	(50)
Parasite Metazoan	9	7
Intestine Large, Rectum	(50)	(50)
Intestine Small, Duodenum	(50)	(50)
Epithelium, Muscularis, Inflammation, Chronic Active	1 [4.0]	
Intestine Small, Ileum	(50)	(50)
Inflammation		
Ulcer		
Intestine Small, Jejunum	(50)	(50)
Liver	(50)	(50)
Amyloid Deposition		
Angiectasis		
Basophilic Focus	2	2
Cholangiofibrosis		
Clear Cell Focus	31	38
Cytoplasmic Alteration	1 [1.0]	
Degeneration, Cystic	8 [1.1]	11 [1.3]
Eosinophilic Focus	9	7

a - Number of animals examined microscopically at site and number of animals with lesion
b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Extramedullary Hematopoiesis		1 [1.0]
Fatty Change		
Fatty Change, Focal		
Fatty Change, Diffuse		
Hepatodiaphragmatic Nodule		
Inflammation, Focal	24 [1.0]	24 [1.0]
Inflammation, Chronic Active		
Mixed Cell Focus	6	9
Necrosis	20 [1.3]	21 [1.3]
Pigment	30 [2.0]	26 [1.4]
Arteriole, Necrosis		
Bile Duct, Cyst		
Bile Duct, Dilation		
Bile Duct, Hyperplasia	1 [1.0]	5 [1.0]
Endothelial Cell, Hypertrophy, Diffuse		
Hepatocyte, Cytoplasmic Alteration	46 [1.8]	41 [1.7]
Hepatocyte, Hyperplasia, Nodular	1 [3.0]	
Hepatocyte, Hypertrophy	43 [1.6]	42 [1.5]
Hepatocyte, Single Cell Death	24 [1.3]	29 [1.3]
Kupffer Cell, Hyperplasia		
Mesentery	(1)	(1)
Fat, Necrosis	1 [1.0]	1 [1.0]
Pancreas	(50)	(50)
Basophilic Focus		
Hemorrhage		
Inflammation		
Inflammation, Chronic Active	4 [3.0]	5 [1.2]
Acinus, Atrophy	7 [1.6]	14 [1.2]
Acinus, Hyperplasia	31 [3.2]	33 [3.4]
Duct, Degeneration, Mucoid		
Duct, Inflammation, Chronic Active		1 [4.0]
Salivary Glands	(49)	(50)
Atrophy	1 [2.0]	
Stomach, Forestomach	(50)	(50)
Inflammation	1 [1.0]	4 [1.5]
Mineral	1 [1.0]	

a - Number of animals examined microscopically at site and number of animals with lesion
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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Perforation		
Ulcer		
Epithelium, Erosion		
Epithelium, Hyperplasia, Basal Cell		
Epithelium, Hyperplasia, Squamous	4 [1.0]	6 [1.5]
Stomach, Glandular	(50)	(50)
Erosion		1 [1.0]
Inflammation	1 [1.0]	1 [1.0]
Metaplasia, Atypical		
Mineral		
Epithelium, Metaplasia, Squamous	1 [1.0]	
Glands, Hyperplasia, Atypical, Focal		
Glands, Necrosis		
CARDIOVASCULAR SYSTEM		
Blood Vessel	(50)	(50)
Inflammation	1 [2.0]	1 [1.0]
Inflammation, Chronic	2 [2.0]	3 [1.7]
Mineral	4 [1.0]	4 [1.0]
Adventitia, Aorta, Hemorrhage		
Aorta, Mineral	1 [1.0]	4 [1.0]
Aorta, Pulmonary Artery, Mineral	1 [1.0]	1 [1.0]
Aorta, Pulmonary Vein, Mineral		
Pulmonary Artery, Mineral		1 [1.0]
Pulmonary Vein, Mineral		
Pulmonary Vein, Thrombus	1 [1.0]	
Heart	(50)	(50)
Cardiomyopathy	25 [1.2]	24 [1.1]
Metaplasia, Osseous		
Mineral		
Necrosis		
Atrium, Fibrosis		
Coronary Artery, Mineral		1 [1.0]
Endocardium, Hyperplasia	1 [3.0]	

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Endocardium, Ventricle, Inflammation		1 [4.0]
Myocardium, Hemorrhage	1 [2.0]	
Myocardium, Inflammation	1 [3.0]	
Schwann Cell, Hyperplasia		
Valve, Degeneration	3 [1.3]	
Valve, Thrombus	1 [2.0]	
ENDOCRINE SYSTEM		
Adrenal Cortex	(50)	(50)
Cyst		
Degeneration, Cystic		6 [1.0]
Hyperplasia, Focal		
Hypertrophy	16 [1.5]	17 [1.4]
Necrosis	1 [1.0]	1 [1.0]
Thrombus		
Zona Fasciculata, Hyperplasia	1 [2.0]	5 [2.6]
Adrenal Medulla	(50)	(50)
Hyperplasia	2 [1.0]	2 [1.0]
Islets, Pancreatic	(50)	(50)
Hyperplasia	3 [2.3]	9 [1.8]
Metaplasia, Hepatocyte		
Parathyroid Gland	(41)	(42)
Hyperplasia	1 [1.0]	1 [3.0]
Hyperplasia, Focal		
Pituitary Gland	(50)	(50)
Cyst		
Hemorrhage		
Pars Distalis, Hyperplasia	18 [1.5]	17 [1.6]
Pars Distalis, Pars Intermedia, Hyperplasia		1 [1.0]
Pars Intermedia, Hypertrophy		
Rathke's Cleft, Hyperplasia		
Thyroid Gland	(49)	(50)
C-cell, Hyperplasia	7 [1.4]	8 [2.1]
Follicular Cell, Hyperplasia		

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Follicular Cell, Hypertrophy	11 [1.8]	19 [2.2]
GENERAL BODY SYSTEM		
None		
GENITAL SYSTEM		
Epididymis	(50)	(50)
Preputial Gland	(50)	(50)
Inflammation	1 [3.0]	
Duct, Hyperplasia		
Prostate	(50)	(50)
Inflammation		
Dorsal, Inflammation, Chronic Active	2 [1.0]	1 [1.0]
Dorsal, Lateral, Inflammation, Chronic Active	1 [4.0]	
Epithelium, Ventral, Hyperplasia	3 [1.7]	3 [1.0]
Lateral, Inflammation, Chronic Active	1 [1.0]	1 [2.0]
Ventral, Inflammation, Chronic		1 [2.0]
Ventral, Inflammation, Chronic Active	9 [1.8]	8 [1.1]
Seminal Vesicle	(50)	(50)
Hyperplasia		
Inflammation		
Testes	(50)	(50)
Edema	1 [3.0]	2 [2.5]
Bilateral, Germinal Epithelium, Degeneration	3 [2.3]	6 [3.2]
Germinal Epithelium, Degeneration	4 [1.5]	4 [1.3]
Interstitial Cell, Hyperplasia		
HEMATOPOIETIC SYSTEM		
Bone Marrow	(50)	(50)
Hyperplasia	5 [2.8]	9 [2.8]
Myelofibrosis		

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Lymph Node	(0)	(1)
Deep Cervical, Inflammation, Granulomatous		
Mediastinal, Hemorrhage		
Mediastinal, Hyperplasia, Lymphoid		
Mediastinal, Infiltration Cellular, Histiocyte		
Mediastinal, Infiltration Cellular, Plasma Cell		
Mediastinal, Pigment		
Pancreatic, Ectasia		
Pancreatic, Pigment		
Lymph Node, Mandibular	(49)	(50)
Atrophy	2 [2.0]	3 [2.0]
Ectasia		
Hemorrhage		
Hyperplasia, Lymphoid	1 [2.0]	3 [2.3]
Infiltration Cellular, Plasma Cell	4 [1.5]	
Lymph Node, Mesenteric	(50)	(50)
Atrophy		1 [3.0]
Hyperplasia, Lymphoid	2 [2.0]	
Spleen	(50)	(50)
Extramedullary Hematopoiesis	37 [1.3]	36 [1.4]
Hemorrhage	1 [4.0]	
Infarct		
Pigment	27 [1.0]	28 [1.1]
Capsule, Cyst		
Lymphoid Follicle, Atrophy	7 [1.9]	2 [2.5]
Lymphoid Follicle, Hyperplasia		
Thymus	(49)	(45)
Atrophy	47 [2.7]	43 [2.8]
Hyperplasia, Lymphoid		1 [2.0]
Epithelial Cell, Hyperplasia, Tubular		
INTEGUMENTARY SYSTEM		
Mammary Gland	(50)	(50)
Skin	(50)	(50)

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Cyst Epithelial Inclusion		1
Foreign Body	1	
Hyperkeratosis	1 [3.0]	
Inflammation	2 [2.5]	4 [3.5]
Inflammation, Suppurative		
Ulcer	1 [1.0]	2 [2.0]
Epidermis, Hyperplasia		
Hair Follicle, Hyperplasia		
MUSCULOSKELETAL SYSTEM		
Bone	(50)	(50)
Hyperostosis		
Osteopetrosis		
Joint, Arthrosis		
Skeletal Muscle	(0)	(2)
NERVOUS SYSTEM		
Brain	(50)	(50)
Compression		
Gliosis, Focal		
Inflammation	1 [1.0]	1 [3.0]
Necrosis	3 [3.3]	
Cerebrum, Edema		1 [2.0]
Peripheral Nerve	(0)	(0)
Axon, Degeneration		
Spinal Cord	(0)	(0)
Nerve, Degeneration		
RESPIRATORY SYSTEM		
Larynx	(0)	(0)
Lung	(50)	(50)

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Foreign Body		
Infiltration Cellular, Histiocyte	22 [2.3]	23 [1.7]
Infiltration Cellular, Lymphocyte		1 [3.0]
Inflammation, Granulomatous, Multifocal	4 [1.0]	6 [1.2]
Inflammation, Acute		
Inflammation, Chronic Active	5 [1.0]	6 [1.3]
Alveolar Epithelium, Hyperplasia	2 [1.0]	2 [1.0]
Alveolar Epithelium, Hypertrophy		
Serosa, Fibrosis, Multifocal		
Nose	(50)	(50)
Glands, Olfactory Epithelium, Inflammation		
Glands, Respiratory Epithelium, Hyperplasia		
Glands, Respiratory Epithelium, Inflammation		1 [1.0]
Nasolacrimal Duct, Inflammation		1 [1.0]
Olfactory Epithelium, Accumulation, Hyaline Droplet	37 [2.1]	42 [2.2]
Olfactory Epithelium, Inflammation		
Olfactory Epithelium, Metaplasia		
Olfactory Epithelium, Necrosis		
Olfactory Epithelium, Respiratory Epithelium, Inflammation		
Respiratory Epithelium, Inflammation	1 [1.0]	7 [1.0]
Respiratory Epithelium, Metaplasia		
Respiratory Epithelium, Metaplasia, Mucous		
Trachea	(50)	(50)
SPECIAL SENSES SYSTEM		
Eye	(50)	(50)
Phthisis Bulbi		
Anterior Chamber, Cornea, Inflammation		1 [3.0]
Anterior Chamber, Cornea, Iris, Inflammation		
Cornea, Inflammation	1 [1.0]	3 [1.0]
Retina, Degeneration	5 [1.0]	6 [1.3]
Retina, Gliosis, Focal		
Retina, Inflammation		

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Harlan Sprague Dawley RATS MALE	0/80 ppm	300/80 ppm
Harderian Gland	(49)	(50)
Hyperplasia	1 [1.0]	
Metaplasia		
Necrosis		1 [2.0]
Lacrimal Gland	(0)	(0)
Zymbal's Gland	(0)	(1)
URINARY SYSTEM		
Kidney	(50)	(50)
Accumulation, Hyaline Droplet		
Infarct	7 [1.0]	2 [1.0]
Mineral		
Nephropathy, Chronic Progressive	47 [1.5]	44 [2.0]
Cortex, Cyst	1	
Cortex, Inflammation	1 [2.0]	
Papilla, Necrosis		
Papilla, Urothelium, Hyperplasia		1 [1.0]
Pelvis, Dilation		
Pelvis, Inflammation	1 [2.0]	
Renal Tubule, Necrosis		
Urinary Bladder	(50)	(50)
Hemorrhage		
Infiltration Cellular, Mast Cell		
Inflammation	1 [1.0]	

*** END OF REPORT ***

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