

Experiment Number: 20523 - 04

**P18: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a) WITH
AVERAGE SEVERITY GRADES[b]**

Date Report Requested: 02/02/2015

Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

F1_M3

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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Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
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Disposition Summary

Animals Initially In Study	50	50	50	50
Early Deaths				
Accidentally Killed			1	
Moribund Sacrifice	4	9	6	5
Natural Death	8	2	6	8
Survivors				
Natural Death			1	
Terminal Sacrifice	38	39	36	37
Animals Examined Microscopically	50	50	50	50

ALIMENTARY SYSTEM

Esophagus	(50)	(50)	(50)	(50)
Gallbladder	(43)	(46)	(39)	(42)
Infiltration Cellular, Lymphoid			1 [1.0]	
Inflammation, Chronic Active	1 [1.0]	1 [1.0]	1 [1.0]	1 [1.0]
Vacuolization Cytoplasmic		1 [2.0]		2 [2.0]
Epithelium, Hyperplasia				1 [2.0]
Intestine Large, Cecum	(45)	(49)	(47)	(46)
Hemorrhage	1 [3.0]			
Hyperplasia	1 [3.0]			
Hyperplasia, Lymphoid	2 [1.0]			3 [1.7]
Infiltration Cellular, Lymphoid			1 [1.0]	
Inflammation	2 [2.0]	2 [1.5]	3 [1.7]	1 [1.0]
Necrosis	1 [1.0]		1 [3.0]	
Intestine Large, Colon	(48)	(50)	(48)	(48)
Hyperplasia, Lymphoid			1 [4.0]	
Intestine Large, Rectum	(46)	(48)	(46)	(45)
Inflammation		1 [2.0]		
Intestine Small, Duodenum	(44)	(48)	(45)	(44)
Inflammation				1 [1.0]
Intestine Small, Ileum	(45)	(49)	(46)	(43)
Cyst		1		
Hyperplasia, Lymphoid	8 [1.4]	9 [1.3]	11 [1.3]	11 [1.5]

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)

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Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Inflammation		1 [1.0]	1 [1.0]	
Intestine Small, Jejunum	(45)	(48)	(45)	(44)
Hyperplasia, Lymphoid	1 [1.0]	1 [2.0]	3 [1.3]	2 [1.5]
Inflammation			1 [4.0]	
Necrosis			1 [4.0]	
Perforation			1 [4.0]	
Liver	(50)	(50)	(50)	(50)
Angiectasis	1 [1.0]			
Basophilic Focus	11	9	3	4
Clear Cell Focus	14	11	9	13
Congestion	1 [2.0]			
Eosinophilic Focus	8	12	17	7
Fatty Change				1 [1.0]
Fibrosis			1 [2.0]	
Hemorrhage	1 [3.0]			
Inflammation, Chronic Active			2 [1.0]	1 [1.0]
Mixed Cell Focus	3	3	6	5
Necrosis				1 [3.0]
Tension Lipidosis	1 [2.0]	3 [1.0]	3 [1.0]	
Thrombosis				1 [3.0]
Bile Duct, Vacuolization Cytoplasmic				1 [1.0]
Centrilobular, Hepatocyte, Fatty Change		2 [2.5]		
Centrilobular, Hepatocyte, Necrosis	2 [2.0]			
Hepatocyte, Hypertrophy	1 [1.0]	1 [1.0]		1 [2.0]
Hepatocyte, Necrosis	3 [2.7]	7 [1.4]	5 [1.8]	5 [1.8]
Hepatocyte, Vacuolization Cytoplasmic	1 [2.0]			
Periportal, Fatty Change			1 [2.0]	
Serosa, Fibrosis			1 [2.0]	
Mesentery	(5)	(7)	(4)	(2)
Fat, Necrosis	4 [1.3]	4 [1.8]	1 [2.0]	2 [1.0]
Pancreas	(50)	(50)	(49)	(50)
Atrophy			1 [2.0]	
Cyst				1
Hemorrhage, Acute		1 [1.0]		
Hypertrophy	2 [1.0]			
Inflammation, Chronic Active		3 [1.3]		

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Acinus, Atrophy				1 [1.0]
Duct, Hyperplasia		1 [1.0]		
Salivary Glands	(50)	(50)	(49)	(50)
Stomach, Forestomach	(50)	(50)	(49)	(50)
Abscess				1 [2.0]
Cyst, Squamous				1
Hyperplasia		1 [1.0]	5 [1.2]	1 [2.0]
Infiltration Cellular, Lymphoid		1 [1.0]		
Inflammation, Chronic Active	1 [1.0]	3 [1.3]	3 [1.0]	5 [1.6]
Necrosis		1 [2.0]	1 [2.0]	
Stomach, Glandular	(48)	(50)	(49)	(50)
Cyst, Squamous	1 [1.0]			
Infiltration Cellular, Lymphoid			1 [1.0]	
Inflammation, Chronic Active	1 [1.0]	4 [1.3]	2 [1.5]	4 [1.0]
Mineralization	1 [1.0]	1 [1.0]	2 [1.0]	
Tooth	(5)	(10)	(8)	(5)
Dysplasia	4 [2.3]	9 [1.7]	7 [1.9]	3 [1.7]
Inflammation, Suppurative, Chronic Active		2 [3.5]		
Inflammation, Suppurative			1 [3.0]	2 [2.5]
Malformation	1			

CARDIOVASCULAR SYSTEM

Blood Vessel	(50)	(50)	(50)	(50)
Heart	(50)	(50)	(50)	(50)
Cardiomyopathy	19 [1.5]	17 [1.2]	18 [1.3]	19 [1.3]
Inflammation, Chronic Active	1 [3.0]	3 [1.7]		1 [2.0]
Mineralization	1 [2.0]			
Atrium, Thrombosis	2 [3.0]			

ENDOCRINE SYSTEM

Adrenal Cortex	(50)	(50)	(49)	(49)
Accessory Adrenal Cortical Nodule		1 [1.0]	1 [1.0]	1 [1.0]
Angiectasis			1 [1.0]	2 [1.0]

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Hyperplasia	3 [1.0]	2 [1.5]	1 [1.0]	1 [1.0]
Hypertrophy	21 [1.3]	30 [1.1]	26 [1.1]	18 [1.2]
Subcapsular, Hyperplasia		1 [1.0]		
Subcapsular, Hypertrophy		1 [2.0]		
Adrenal Medulla	(50)	(50)	(48)	(49)
Angiectasis	1 [1.0]	2 [2.0]		1 [1.0]
Hyperplasia	6 [1.0]	5 [1.2]	5 [1.2]	5 [1.2]
Hypertrophy	1 [1.0]			1 [1.0]
Islets, Pancreatic	(50)	(50)	(48)	(50)
Hyperplasia		2 [2.5]		
Hypertrophy			1 [1.0]	
Parathyroid Gland	(28)	(28)	(36)	(34)
Cyst		1		1
Pituitary Gland	(50)	(49)	(48)	(48)
Pars Distalis, Angiectasis			1 [1.0]	1 [1.0]
Pars Distalis, Cyst	4	1	3	6
Pars Distalis, Hyperplasia	3 [1.0]	3 [1.3]	2 [1.5]	3 [1.7]
Pars Intermedia, Cyst	1			
Thyroid Gland	(50)	(49)	(47)	(49)

GENERAL BODY SYSTEM

None

GENITAL SYSTEM

Epididymis	(50)	(50)	(49)	(50)
Exfoliated Germ Cell	39	40	44	40
Infiltration Cellular, Lymphoid				1 [1.0]
Inflammation, Chronic Active	1 [2.0]	3 [1.3]	1 [1.0]	1 [1.0]
Preputial Gland	(49)	(50)	(48)	(49)
Ectasia	4 [1.3]	3 [1.0]	3 [1.0]	4 [1.0]
Inflammation, Chronic Active	9 [2.1]	14 [2.1]	12 [1.7]	12 [2.3]
Necrosis			1 [3.0]	
Duct, Ectasia		2 [3.5]		

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B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Prostate	(50)	(49)	(50)	(50)
Hyperplasia			3 [1.0]	
Infiltration Cellular, Lymphoid	1 [1.0]	1 [1.0]	1 [2.0]	2 [1.5]
Inflammation	2 [2.0]	1 [4.0]	1 [1.0]	
Arteriole, Inflammation, Chronic Active	1 [2.0]			
Seminal Vesicle	(50)	(50)	(50)	(50)
Dilatation				1 [2.0]
Infiltration Cellular, Lymphoid	1 [1.0]	1 [1.0]	1 [2.0]	
Inflammation	1 [2.0]	2 [3.5]	1 [2.0]	
Testes	(50)	(50)	(49)	(50)
Degeneration	9 [1.3]	17 [1.2]	15 [1.1]	9 [1.2]
Necrosis		1 [1.0]		

HEMATOPOIETIC SYSTEM

Bone Marrow	(50)	(50)	(49)	(50)
Necrosis		2 [1.5]		
Myeloid Cell, Hyperplasia	16 [1.2]	29 [1.4]	18 [1.3]	29 [1.4]
Lymph Node	(3)	(0)	(3)	(1)
Lumbar, Hyperplasia, Lymphoid			1 [2.0]	
Pancreatic, Hyperplasia, Lymphoid	1 [3.0]			
Lymph Node, Bronchial	(38)	(37)	(39)	(39)
Hematopoietic Cell Proliferation		1 [1.0]		
Hyperplasia, Lymphoid	3 [1.7]	3 [1.3]	2 [1.0]	14 [1.4]
Infiltration Cellular, Histiocyte		1 [1.0]		7 [1.6]
Infiltration Cellular, Plasma Cell				1 [2.0]
Plasma Cell, Hyperplasia			1 [1.0]	
Lymph Node, Mandibular	(20)	(27)	(25)	(27)
Hematopoietic Cell Proliferation	1 [1.0]			
Hyperplasia, Lymphoid	3 [2.3]	3 [1.0]	2 [1.0]	1 [1.0]
Infiltration Cellular, Histiocyte	1 [2.0]	1 [1.0]	1 [1.0]	1 [1.0]
Lymph Node, Mediastinal	(35)	(35)	(41)	(40)
Hematopoietic Cell Proliferation			1 [1.0]	
Hyperplasia, Lymphoid	3 [1.3]	2 [1.5]	1 [1.0]	5 [1.2]
Lymph Node, Mesenteric	(48)	(49)	(47)	(48)

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Angiectasis	1 [2.0]		3 [1.7]	
Congestion	1 [2.0]			
Hematopoietic Cell Proliferation		3 [1.3]	4 [1.8]	1 [2.0]
Hyperplasia, Lymphoid	15 [1.4]	11 [1.5]	9 [1.4]	6 [1.3]
Hyperplasia, Plasma Cell	1 [3.0]		1 [2.0]	
Infiltration Cellular		1 [2.0]		
Inflammation, Chronic Active		1 [1.0]	1 [2.0]	1 [1.0]
Spleen	(49)	(50)	(49)	(50)
Angiectasis		1 [1.0]		
Hematopoietic Cell Proliferation	11 [1.4]	8 [1.9]	11 [1.7]	10 [1.8]
Hyperplasia, Lymphoid	13 [1.7]	15 [1.7]	9 [1.8]	8 [1.6]
Necrosis, Lymphoid		1 [2.0]		
Thymus	(44)	(44)	(47)	(46)
Atrophy	5 [2.0]	5 [2.4]	8 [1.5]	9 [1.8]
Cyst	1	3	5 [1.0]	5
Ectopic Parathyroid Gland	1 [1.0]	2 [1.0]	3 [1.0]	
Ectopic Thyroid				1 [1.0]
Hyperplasia, Lymphoid	1 [1.0]	5 [1.0]		4 [2.0]
Epithelial Cell, Hyperplasia	1 [3.0]			

INTEGUMENTARY SYSTEM

Mammary Gland	(3)	(3)	(0)	(0)
Skin	(50)	(50)	(50)	(50)
Cyst Epithelial Inclusion		1		4
Fibrosis			1 [2.0]	
Hyperkeratosis				1 [2.0]
Hyperplasia	3 [2.0]	2 [2.0]		3 [2.0]
Inflammation, Chronic Active	10 [2.2]	6 [2.2]	8 [2.6]	11 [2.3]
Metaplasia, Osseous			1 [1.0]	
Necrosis	1 [4.0]	3 [2.3]	1 [4.0]	
Ulcer	3 [2.7]	2 [4.0]	3 [3.3]	3 [3.0]
Hair Follicle, Atrophy			1 [2.0]	
Subcutaneous Tissue, Inflammation, Chronic Active		1 [4.0]		

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(50)	(50)	(50)
Fibro-Osseous Lesion	1	3	1	
Hyperostosis	1 [1.0]	1 [1.0]		
Skeletal Muscle	(0)	(1)	(2)	(1)
Degeneration		1 [1.0]		1 [1.0]
NERVOUS SYSTEM				
Brain	(50)	(50)	(49)	(50)
Compression			1 [1.0]	
Gliosis				1 [2.0]
Infiltration Cellular	1 [1.0]	2 [2.0]	1 [1.0]	
Inflammation, Chronic Active	2 [1.5]	1 [1.0]	1 [1.0]	1 [1.0]
Peripheral Nerve	(0)	(1)	(1)	(2)
Degeneration		1 [1.0]		1 [1.0]
Spinal Cord	(0)	(1)	(1)	(2)
RESPIRATORY SYSTEM				
Larynx	(48)	(49)	(49)	(49)
Foreign Body		1 [2.0]		
Inflammation, Chronic Active	45 [1.3]	47 [1.4]	46 [1.4]	48 [1.4]
Mineralization			1 [1.0]	
Necrosis		1 [1.0]	1 [1.0]	
Epiglottis, Hyperplasia, Squamous	1 [2.0]	2 [1.0]	14 [1.1]	30 [1.2]
Epiglottis, Metaplasia, Squamous		49 [2.0]	49 [3.1]	49 [3.9]
Squamous Epithelium, Hyperplasia	1 [1.0]			
Lung	(50)	(50)	(49)	(50)
Fibrosis		2 [1.0]	5 [1.2]	45 [1.3]
Hemorrhage		1 [1.0]	1 [1.0]	
Infiltration Cellular, Histiocyte	5 [2.0]	9 [1.6]	15 [1.5]	49 [2.0]

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Inflammation, Chronic	5 [1.4]	12 [1.0]	16 [1.3]	50 [2.4]
Metaplasia, Osseous				1 [1.0]
Pigmentation	2 [3.0]	2 [2.0]	2 [1.5]	8 [1.3]
Proteinosis			1 [2.0]	
Thrombosis		1 [1.0]	2 [2.5]	
Alveolar/bronchiolar Epithelium, Hyperplasia	3 [3.0]	7 [1.4]	15 [1.3]	50 [2.3]
Alveolar Epithelium, Hyperplasia	3 [2.0]	3 [1.0]	7 [1.1]	47 [1.7]
Bronchiole, Metaplasia, Squamous				1 [1.0]
Nose	(49)	(50)	(49)	(50)
Exudate	2 [1.0]	11 [1.2]	35 [2.0]	49 [2.5]
Inflammation, Suppurative	1 [2.0]			
Inflammation, Chronic			1 [1.0]	
Inflammation, Chronic Active	3 [1.0]	33 [1.0]	39 [1.3]	50 [1.5]
Polyp, Inflammatory			1	
Glands, Olfactory Epithelium, Hyperplasia				1 [2.0]
Lateral Wall, Inflammation, Chronic Active	2 [2.5]	7 [2.7]	4 [3.3]	5 [2.4]
Lateral Wall, Necrosis		1 [4.0]		
Nasolacrimal Duct, Abscess	1 [4.0]			
Nasolacrimal Duct, Inflammation, Chronic Active	3 [1.0]	2 [2.0]	2 [1.0]	2 [1.0]
Nasopharyngeal Duct, Hyperplasia		1 [3.0]		
Nasopharyngeal Duct, Inflammation, Chronic Active		1 [3.0]		
Nasopharyngeal Duct, Perforation		1	11	19
Olfactory Epithelium, Accumulation, Hyaline Droplet	2 [1.0]	46 [1.5]	48 [1.9]	50 [2.0]
Olfactory Epithelium, Atrophy		1 [1.0]		4 [1.0]
Olfactory Epithelium, Metaplasia, Respiratory	3 [1.0]	2 [1.0]	3 [1.0]	5 [1.2]
Respiratory Epithelium, Accumulation, Hyaline Droplet	7 [1.0]	49 [1.9]	49 [1.9]	50 [2.0]
Respiratory Epithelium, Atrophy		1 [1.0]	20 [1.0]	40 [1.1]
Respiratory Epithelium, Hyperplasia	41 [1.2]	49 [1.5]	47 [1.6]	48 [1.7]
Respiratory Epithelium, Metaplasia, Squamous	1 [1.0]	2 [1.0]	1 [1.0]	1 [1.0]
Respiratory Epithelium, Necrosis	2 [1.0]	1 [1.0]	2 [1.0]	23 [1.1]
Turbinate, Atrophy		2 [1.5]	5 [1.0]	14 [1.0]
Turbinate, Perforation			1	13
Pleura	(0)	(1)	(0)	(1)

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Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Trachea	(46)	(50)	(47)	(48)
Cartilage, Metaplasia, Osseous	1 [1.0]		1 [1.0]	1 [1.0]
Epithelium, Hyperplasia				3 [1.0]

SPECIAL SENSES SYSTEM

Eye	(50)	(50)	(49)	(49)
Cataract				1 [4.0]
Inflammation, Chronic Active	1 [3.0]	4 [1.5]	3 [2.7]	3 [2.3]
Necrosis			1 [2.0]	
Harderian Gland	(50)	(50)	(49)	(50)
Hyperplasia	1 [2.0]	1 [1.0]	3 [1.3]	1 [1.0]
Inflammation		1 [1.0]		

URINARY SYSTEM

Kidney	(50)	(50)	(49)	(50)
Angiectasis			1 [2.0]	
Cyst			1	1 [1.0]
Hydronephrosis				1 [1.0]
Hyperplasia, Lymphoid	1 [2.0]	2 [1.5]		
Infarct, Chronic	1 [1.0]	2 [1.5]	1 [1.0]	2 [2.0]
Inflammation, Chronic Active	1 [2.0]	1 [1.0]	2 [2.0]	2 [2.0]
Metaplasia, Osseous		2 [1.0]	1 [1.0]	1 [2.0]
Mineralization	1 [1.0]	1 [1.0]		
Nephropathy	47 [1.9]	46 [1.9]	45 [2.0]	49 [1.8]
Artery, Inflammation, Chronic Active			1 [2.0]	
Urethra	(0)	(0)	(1)	(0)
Urinary Bladder	(50)	(50)	(49)	(50)
Angiectasis		1 [1.0]		
Calculus Micro Observation Only	1 [1.0]			
Inflammation, Suppurative		1 [4.0]		
Inflammation, Chronic Active			1 [4.0]	
Ulcer		1 [4.0]		

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CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE MALE

Control

10 mg/m3

30 mg/m3

100 mg/m3

*** END OF MALE ***

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)

Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
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Disposition Summary

Animals Initially In Study	50	50	50	50
Early Deaths				
Accidentally Killed	1			
Moribund Sacrifice	10	9	4	13
Natural Death	4	5	10	7
Survivors				
Moribund Sacrifice	1			
Natural Death				1
Terminal Sacrifice	34	36	36	29
Animals Examined Microscopically	50	50	50	50

ALIMENTARY SYSTEM

Esophagus	(50)	(50)	(50)	(49)
Periesophageal Tissue, Inflammation, Chronic Active	1 [2.0]			1 [2.0]
Gallbladder	(46)	(46)	(44)	(44)
Inflammation, Chronic Active	1 [1.0]			
Vacuolization Cytoplasmic			1 [2.0]	
Intestine Large, Cecum	(50)	(49)	(46)	(45)
Hyperplasia, Lymphoid		1 [1.0]		
Inflammation	2 [2.0]		1 [1.0]	1 [1.0]
Intestine Large, Colon	(50)	(50)	(47)	(50)
Hyperplasia, Lymphoid				1 [2.0]
Inflammation	1 [2.0]			
Intestine Large, Rectum	(48)	(48)	(46)	(45)
Edema	1 [1.0]			
Inflammation		1 [1.0]		
Intestine Small, Duodenum	(48)	(46)	(43)	(45)
Hyperplasia, Lymphoid		1 [1.0]		
Infiltration Cellular, Lymphoid		1 [1.0]		
Inflammation	1 [2.0]	3 [1.3]	1 [1.0]	
Necrosis			1 [1.0]	
Intestine Small, Ileum	(48)	(47)	(44)	(46)

a - Number of animals examined microscopically at site and number of animals with lesion

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Test Type: CHRONIC

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Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Hyperplasia, Lymphoid	4 [1.3]	8 [1.5]	4 [1.0]	2 [2.0]
Hyperplasia, Plasma Cell				1 [4.0]
Inflammation	1 [4.0]	4 [1.3]		
Perforation		1 [2.0]		
Serosa, Fibrosis		1 [3.0]		
Intestine Small, Jejunum	(48)	(45)	(45)	(46)
Hyperplasia, Lymphoid	2 [2.0]	2 [1.5]	1 [2.0]	1 [3.0]
Inflammation	1 [4.0]	1 [1.0]	1 [4.0]	
Perforation	1 [4.0]			
Ulcer			1 [4.0]	
Liver	(50)	(50)	(50)	(50)
Angiectasis	1 [1.0]	2 [3.0]	1 [1.0]	
Basophilic Focus	6	2	2	4
Clear Cell Focus		5	3	3
Cyst		1		
Eosinophilic Focus	3	8	7	8
Fatty Change	1 [2.0]	2 [2.5]	1 [3.0]	
Hematopoietic Cell Proliferation		1 [1.0]	1 [2.0]	
Hepatodiaphragmatic Nodule		1		
Hyperplasia, Granulocytic	1 [4.0]			
Infarct		1 [4.0]		
Inflammation, Chronic Active	5 [2.0]	1 [2.0]	1 [2.0]	2 [1.0]
Mixed Cell Focus	1	1		1
Necrosis	1 [3.0]	1 [2.0]		
Tension Lipidosis	1 [1.0]	4 [1.3]		
Hepatocyte, Degeneration				2 [1.5]
Hepatocyte, Hypertrophy		2 [2.0]	1 [3.0]	1 [1.0]
Hepatocyte, Necrosis	3 [1.3]	1 [1.0]	2 [3.0]	5 [2.2]
Mesentery	(10)	(10)	(5)	(11)
Inflammation, Chronic Active	2 [3.0]	1 [4.0]		
Pigmentation	1 [2.0]			
Fat, Necrosis	6 [1.7]	9 [2.0]	5 [1.8]	6 [2.0]
Pancreas	(50)	(50)	(49)	(50)
Atrophy	2 [1.5]	1 [2.0]	1 [2.0]	1 [3.0]
Hypertrophy				3 [1.7]
Infiltration Cellular, Lymphoid	1 [1.0]	1 [1.0]		1 [1.0]

a - Number of animals examined microscopically at site and number of animals with lesion

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Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Inflammation, Chronic Active	3 [1.3]		3 [2.0]	
Necrosis	1 [1.0]			
Duct, Cyst	1		1 [1.0]	
Salivary Glands	(50)	(50)	(50)	(50)
Inflammation, Suppurative		1 [2.0]		
Necrosis, Acute		1 [2.0]		
Stomach, Forestomach	(50)	(50)	(50)	(50)
Cyst, Squamous		1		
Hyperkeratosis	2 [1.5]	4 [2.0]	1 [1.0]	2 [1.5]
Hyperplasia	3 [1.7]	6 [1.7]	1 [1.0]	2 [1.5]
Inflammation			1 [1.0]	1 [1.0]
Inflammation, Chronic Active	5 [1.8]	1 [2.0]	1 [1.0]	1 [1.0]
Ulcer		1 [1.0]	1 [1.0]	1 [2.0]
Stomach, Glandular	(49)	(50)	(49)	(50)
Cyst		1	1	
Hyperplasia, Lymphoid		1 [1.0]		
Inflammation, Chronic Active	4 [1.8]	3 [1.0]	2 [1.0]	1 [2.0]
Mineralization	1 [1.0]	2 [1.0]		
Tooth	(0)	(1)	(0)	(0)
Dysplasia		1 [4.0]		

CARDIOVASCULAR SYSTEM

Blood Vessel	(50)	(50)	(50)	(50)
Heart	(50)	(50)	(49)	(50)
Cardiomyopathy	12 [1.3]	18 [1.2]	12 [1.4]	15 [1.3]
Infiltration Cellular, Lymphoid	1 [1.0]			
Inflammation, Suppurative			1 [2.0]	
Inflammation, Chronic Active	1 [2.0]	5 [1.6]	3 [1.0]	6 [2.3]
Mineralization	1 [1.0]		1 [1.0]	
Necrosis			2 [1.5]	1 [4.0]
Thrombosis				1 [4.0]
Coronary Artery, Fibrosis	1 [2.0]			
Coronary Artery, Thrombosis				1 [1.0]

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

Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(50)
Accessory Adrenal Cortical Nodule	2 [1.0]	2 [1.5]	3 [1.0]	1 [1.0]
Angiectasis		3 [1.3]	2 [1.0]	2 [1.5]
Degeneration, Cystic				1 [3.0]
Hematopoietic Cell Proliferation	1 [1.0]		1 [2.0]	
Hyperplasia	6 [1.2]	6 [1.3]	2 [1.0]	7 [1.1]
Hypertrophy	14 [1.1]	8 [1.1]	13 [1.1]	10 [1.1]
Inflammation, Chronic Active	1 [1.0]			
Adrenal Medulla	(50)	(50)	(50)	(50)
Hyperplasia	11 [1.1]	7 [1.1]	5 [1.2]	5 [1.0]
Hypertrophy	1 [1.0]		1 [1.0]	
Pigmentation				1 [1.0]
Islets, Pancreatic	(50)	(49)	(49)	(50)
Parathyroid Gland	(35)	(30)	(36)	(28)
Ectopic Tissue	1 [1.0]			
Pituitary Gland	(48)	(49)	(49)	(49)
Pars Distalis, Angiectasis	5 [1.0]	2 [1.0]	2 [1.0]	5 [1.2]
Pars Distalis, Cyst				1
Pars Distalis, Hyperplasia	11 [1.5]	17 [1.4]	15 [1.5]	10 [1.4]
Pars Distalis, Hypertrophy	1 [1.0]			1 [2.0]
Pars Intermedia, Hyperplasia	1 [3.0]			
Thyroid Gland	(50)	(50)	(50)	(49)
Cyst	1 [1.0]	1	1	
Inflammation, Suppurative			1 [1.0]	
Inflammation, Chronic Active		2 [1.0]		1 [1.0]
Follicular Cell, Hyperplasia	3 [1.7]		2 [1.0]	2 [1.5]
Follicular Cell, Hypertrophy				1 [2.0]

GENERAL BODY SYSTEM

Tissue NOS	(1)	(0)	(0)	(0)
Hemorrhage	1 [4.0]			

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Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
GENITAL SYSTEM				
Clitoral Gland	(46)	(48)	(45)	(46)
Ovary	(50)	(49)	(49)	(50)
Angiectasis	1 [1.0]	1 [1.0]		3 [1.3]
Congestion			1 [1.0]	
Cyst	13 [4.0]	8	9	7
Cyst, Multiple	1			1
Hemorrhage	1 [4.0]			
Inflammation, Chronic Active	2 [2.5]	1 [3.0]	2 [4.0]	
Periovarian Tissue, Inflammation, Chronic Active	1 [2.0]			
Uterus	(50)	(50)	(50)	(50)
Adenomyosis	1 [1.0]			
Angiectasis	1 [1.0]	4 [1.5]	3 [1.7]	2 [1.5]
Hemorrhage			1 [2.0]	
Inflammation, Chronic Active	3 [1.7]	4 [1.8]	3 [1.3]	5 [1.6]
Necrosis				1 [4.0]
Endometrium, Hyperplasia, Cystic	45 [2.4]	35 [2.4]	43 [2.0]	43 [2.4]
HEMATOPOIETIC SYSTEM				
Bone Marrow	(49)	(50)	(50)	(50)
Atrophy		1 [2.0]		
Hyperplasia, Granulocytic	1 [4.0]			
Myelofibrosis	1 [1.0]			
Necrosis				2 [1.5]
Myeloid Cell, Hyperplasia	1 [1.0]		4 [1.8]	1 [2.0]
Lymph Node	(11)	(11)	(11)	(10)
Pigmentation			1 [1.0]	1 [2.0]
Artery, Lumbar, Inflammation, Chronic Active				1 [3.0]
Artery, Renal, Inflammation, Chronic Active				1 [3.0]
Iliac, Angiectasis			1 [2.0]	1 [2.0]
Iliac, Infiltration Cellular, Mixed Cell	1 [2.0]			
Lumbar, Angiectasis	1 [2.0]	3 [1.7]	1 [2.0]	1 [2.0]

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First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Lumbar, Hematopoietic Cell Proliferation			1 [2.0]	
Lumbar, Infiltration Cellular, Plasma Cell				1 [2.0]
Lumbar, Inflammation, Suppurative	1 [4.0]			
Lumbar, Necrosis	1 [4.0]			
Pancreatic, Hyperplasia, Lymphoid		1 [2.0]	1 [1.0]	
Renal, Angiectasis			1 [3.0]	1 [1.0]
Renal, Hyperplasia, Lymphoid			1 [4.0]	
Renal, Infiltration Cellular, Plasma Cell				1 [2.0]
Renal, Necrosis				1 [3.0]
Lymph Node, Bronchial	(44)	(44)	(44)	(43)
Hematopoietic Cell Proliferation			1 [1.0]	
Hyperplasia, Lymphoid	6 [1.3]	4 [1.0]	9 [1.4]	9 [2.0]
Infiltration Cellular, Histiocyte	1 [1.0]		2 [1.0]	4 [2.0]
Inflammation, Suppurative			1 [2.0]	
Plasma Cell, Hyperplasia				1 [1.0]
Lymph Node, Mandibular	(35)	(42)	(37)	(39)
Hematopoietic Cell Proliferation			1 [2.0]	
Hyperplasia, Lymphoid	4 [1.3]	1 [1.0]	3 [1.3]	1 [3.0]
Infiltration Cellular, Histiocyte			1 [2.0]	1 [1.0]
Infiltration Cellular, Plasma Cell	1 [2.0]			
Lymph Node, Mediastinal	(40)	(44)	(45)	(45)
Hyperplasia, Lymphoid	2 [1.5]	4 [1.0]	7 [1.4]	5 [1.8]
Hyperplasia, Plasma Cell	1 [4.0]	1 [3.0]		
Infiltration Cellular, Histiocyte	1 [2.0]		1 [3.0]	1 [2.0]
Pigmentation				1 [2.0]
Lymph Node, Mesenteric	(49)	(49)	(47)	(48)
Angiectasis		3 [1.7]	2 [1.0]	1 [2.0]
Hematopoietic Cell Proliferation			1 [2.0]	1 [2.0]
Hyperplasia, Lymphoid	11 [1.2]	7 [1.4]	12 [1.4]	4 [1.8]
Inflammation, Chronic Active	1 [4.0]			
Necrosis	1 [4.0]	1 [1.0]		
Artery, Inflammation		1 [2.0]		
Spleen	(50)	(49)	(48)	(49)
Angiectasis	2 [1.0]	1 [2.0]	2 [1.5]	1 [1.0]
Hematopoietic Cell Proliferation	11 [1.9]	7 [1.7]	11 [2.4]	11 [1.9]
Hyperplasia, Granulocytic	1 [4.0]		1 [4.0]	

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Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Hyperplasia, Lymphoid	20 [2.0]	26 [2.1]	17 [1.9]	13 [1.6]
Inflammation, Suppurative	1 [2.0]	1 [2.0]	1 [1.0]	1 [2.0]
Necrosis, Lymphoid		1 [1.0]		1 [2.0]
Thymus	(48)	(48)	(47)	(49)
Angiectasis		2 [1.5]		3 [1.3]
Atrophy	6 [1.7]	1 [1.0]	7 [1.9]	4 [1.8]
Cyst	1 [1.0]	1	1	5 [1.0]
Ectopic Parathyroid Gland	2 [1.0]	3 [1.0]	5 [1.0]	5 [1.2]
Hyperplasia, Lymphoid	11 [1.5]	15 [1.3]	13 [1.5]	11 [1.8]
Necrosis, Lymphoid				1 [2.0]

INTEGUMENTARY SYSTEM

Mammary Gland	(50)	(50)	(50)	(50)
Dilatation		1 [1.0]		
Hyperplasia	1 [2.0]		1 [2.0]	1 [1.0]
Inflammation	1 [1.0]			
Skin	(50)	(50)	(50)	(50)
Edema	1 [2.0]		1 [2.0]	
Hemorrhage, Acute	1 [3.0]			
Hyperplasia				1 [1.0]
Inflammation, Chronic Active	2 [1.0]	3 [2.0]	2 [1.0]	5 [2.0]
Necrosis				1 [4.0]
Ulcer		2 [2.0]		

MUSCULOSKELETAL SYSTEM

Bone	(50)	(50)	(50)	(50)
Fibro-Osseous Lesion	6	10	12	9
Skeletal Muscle	(3)	(4)	(2)	(4)
Degeneration	1 [2.0]			
Infiltration Cellular, Lymphoid	1 [2.0]			

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Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
NERVOUS SYSTEM				
Brain	(50)	(50)	(50)	(50)
Compression	5 [2.6]	1 [2.0]	1 [2.0]	3 [1.7]
Demyelination			1 [2.0]	
Hemorrhage	2 [1.0]			
Hydrocephalus	1 [2.0]			
Infiltration Cellular		1 [1.0]	3 [1.0]	
Infiltration Cellular, Lymphocyte		1 [1.0]		
Inflammation, Chronic Active	3 [1.0]			
Necrosis, Focal		1 [2.0]		
Meninges, Infiltration Cellular			1 [1.0]	
Peripheral Nerve	(3)	(3)	(1)	(2)
Degeneration	1 [1.0]			1 [1.0]
Spinal Cord	(2)	(3)	(1)	(2)
RESPIRATORY SYSTEM				
Larynx	(50)	(50)	(50)	(50)
Inflammation, Chronic Active	44 [1.2]	50 [1.6]	48 [1.4]	47 [1.6]
Necrosis	2 [1.0]			3 [1.0]
Epiglottis, Hyperplasia, Squamous	4 [1.0]	3 [1.0]	16 [1.5]	42 [1.6]
Epiglottis, Metaplasia, Squamous		50 [2.4]	50 [3.5]	50 [4.0]
Lung	(50)	(50)	(50)	(50)
Fibrosis			2 [1.0]	42 [1.5]
Hemorrhage		1 [1.0]	2 [2.0]	
Hyperplasia, Lymphoid				1 [2.0]
Infiltration Cellular, Histiocyte	1 [2.0]	4 [2.3]	15 [1.2]	48 [2.3]
Inflammation, Chronic	1 [1.0]	6 [1.2]	26 [1.1]	47 [2.4]
Metaplasia, Osseous				1 [1.0]
Metaplasia, Squamous				1 [1.0]
Mineralization			1 [1.0]	
Pigmentation				1 [1.0]
Proteinosis			1 [2.0]	
Thrombosis	1 [2.0]			

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Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
Alveolar/bronchiolar Epithelium, Hyperplasia		3 [1.0]	8 [1.1]	45 [2.6]
Alveolar Epithelium, Hyperplasia			2 [1.5]	43 [1.9]
Alveolar Epithelium, Metaplasia, Squamous				1 [2.0]
Interstitial, Inflammation, Suppurative	1 [2.0]			
Mediastinum, Necrosis			1 [2.0]	
Nose	(50)	(50)	(50)	(50)
Cyst, Squamous		1		
Exudate	8 [1.1]	17 [1.0]	48 [2.0]	49 [2.9]
Foreign Body		1		
Inflammation, Chronic Active	4 [1.3]	25 [1.0]	49 [1.2]	49 [1.6]
Glands, Hyperplasia		1 [1.0]		
Goblet Cell, Hyperplasia				2 [1.0]
Lateral Wall, Inflammation, Chronic Active		2 [3.0]		
Nasolacrimal Duct, Inflammation, Chronic Active	2 [1.0]		2 [2.0]	
Nasopharyngeal Duct, Perforation			14	17
Olfactory Epithelium, Accumulation, Hyaline Droplet	14 [1.2]	48 [1.6]	50 [2.0]	50 [2.0]
Olfactory Epithelium, Atrophy	1 [1.0]	2 [1.5]	1 [1.0]	5 [1.0]
Olfactory Epithelium, Metaplasia, Respiratory	2 [1.0]	2 [1.0]	1 [1.0]	4 [1.0]
Respiratory Epithelium, Accumulation, Hyaline Droplet	23 [1.2]	50 [1.8]	50 [2.0]	50 [2.6]
Respiratory Epithelium, Atrophy	1 [1.0]	2 [1.0]	28 [1.0]	39 [1.1]
Respiratory Epithelium, Hyperplasia	49 [1.2]	44 [1.2]	48 [1.6]	49 [1.3]
Respiratory Epithelium, Metaplasia, Squamous	1 [1.0]	2 [1.0]	2 [1.0]	2 [1.0]
Respiratory Epithelium, Necrosis		2 [1.0]	13 [1.0]	23 [1.0]
Turbinate, Atrophy			10 [1.1]	19 [1.0]
Turbinate, Perforation			6	6
Trachea	(49)	(50)	(50)	(49)
Pigmentation				1 [1.0]
Cartilage, Metaplasia, Osseous			2 [1.0]	4 [1.0]
Epithelium, Degeneration				2 [1.5]
Epithelium, Hyperplasia			1 [1.0]	5 [1.4]
Epithelium, Necrosis				1 [1.0]

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Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE	Control	10 mg/m3	30 mg/m3	100 mg/m3
SPECIAL SENSES SYSTEM				
Ear	(0)	(0)	(0)	(1)
Eye	(49)	(50)	(50)	(50)
Inflammation, Chronic Active			1 [2.0]	1 [3.0]
Cornea, Hyperplasia			1 [1.0]	1 [2.0]
Harderian Gland	(50)	(49)	(49)	(49)
Cyst			1	
Hyperplasia	3 [1.0]	2 [1.5]	2 [1.0]	1 [1.0]
Hypertrophy		1 [2.0]		
URINARY SYSTEM				
Kidney	(49)	(50)	(49)	(50)
Amyloid Deposition			1 [4.0]	
Angiectasis				1 [1.0]
Cyst	1			2
Hyperplasia, Lymphoid	2 [2.0]	4 [1.0]		
Infarct, Chronic	4 [1.8]	5 [1.6]	5 [1.6]	
Infiltration Cellular, Lymphoid	1 [2.0]			
Inflammation, Chronic Active	1 [2.0]	2 [1.0]	1 [1.0]	
Metaplasia, Osseous		2 [1.5]	2 [2.0]	
Mineralization	1 [2.0]			
Necrosis	1 [1.0]			
Nephropathy	38 [1.4]	28 [1.4]	26 [1.7]	29 [1.3]
Pigmentation				1 [1.0]
Glomerulus, Inflammation, Acute		1 [1.0]		
Renal Tubule, Hyperplasia	1 [2.0]			
Urethra	(0)	(1)	(0)	(0)
Inflammation, Chronic Active		1 [2.0]		
Urinary Bladder	(50)	(50)	(50)	(50)
Angiectasis			1 [1.0]	
Hyperplasia, Lymphoid	2 [1.0]	3 [1.3]		3 [1.7]
Inflammation, Chronic Active	2 [1.5]			

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)

Experiment Number: 20523 - 04

**P18: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a) WITH
AVERAGE SEVERITY GRADES[b]**

Date Report Requested: 02/02/2015

Test Type: CHRONIC

Metal Working Fluids: Trim VX

Time Report Requested: 13:50:13

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: TRIMVX

First Dose M/F: 08/03/09 / 08/03/09

Species/Strain: MICE/B6C3F1

Lab: BNW

B6C3F1 MICE FEMALE

Control

10 mg/m3

30 mg/m3

100 mg/m3

*** END OF REPORT ***

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)