

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

F1_RE

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

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

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|---|---|-----------|
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | 10 |
|--------------|---|---|---|---|---|---|---|---|---|---|-----------|

* .. 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 | | | | | | | | | | ANIMAL ID |
|----------------------|-----------------|---|---|---|---|---|---|---|---|---|-----------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 0 mg/m3 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 0 |
| | 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 | 1 | 0 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| | * TOTALS | | | | | | | | | | |

| | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|---|--------------|
| Heart | + | + | + | + | + | + | + | + | + | + | 10 |
| Cardiomyopathy | | | 1 | | | | | | | | 1 1.0 |

ENDOCRINE SYSTEM

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

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

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

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| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|-------------|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |

* TOTALS

NERVOUS SYSTEM

Brain + + + + + + + + + + 10

RESPIRATORY SYSTEM

Larynx + + + + + + + + + + 10

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

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

Trachea + + + + + + + + + + 10

SPECIAL SENSES SYSTEM

Eye + + + + + + + + + + 10

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

URINARY SYSTEM

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

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Metal working fluids (Trim VX)

CAS Number: TRIMVX

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Time Report Requested: 13:35:18

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

Lab: BNW

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

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+ .. Tissue examined microscopically
X .. Lesion present
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M .. Missing tissue
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|----------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 mg/m3 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | | | | | | | | | |
| * TOTALS | | | | | | | | | | | | | | | | | | | | |

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
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| | | | | | | | | | | | | | | | | | | | | |
|----------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 mg/m3 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | | | | | | | | | |
| * TOTALS | | | | | | | | | | | | | | | | | | | | |

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

| | | |
|-------|---|-------|
| Skin | + | 1 |
| Ulcer | 3 | 1 3.0 |

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
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X .. Lesion present
I .. Insufficient tissue
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| | | | | | | | | | | | | | | | |
|-----------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WISTAR HAN RATS MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 50 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | | | | | |
| * TOTALS | | | | | | | | | | | | | | | |

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

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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 | |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 50 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| * TOTALS | | | | | | | | | | | |

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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BLANK .. Not examined microscopically

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Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

ALIMENTARY SYSTEM

Stomach, Glandular Atrophy

+
2

1
1 2.0

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Testes
Germinal Epithelium, Degeneration

+
2

1
1 2.0

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue

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

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

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

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

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

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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

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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 | |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 200 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| * TOTALS | | | | | | | | | | | |

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

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1) Minimal 3) Moderate

2) Mild 4) Marked

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

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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TDMS No. 20523 - 01

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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 | |
| | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 200 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| * TOTALS | | | | | | | | | | | |

NONE

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

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

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

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

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

ENDOCRINE SYSTEM

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

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

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+ .. 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

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | | |
|-------------------------------|---|---|---|---|---|---|---|---|---|---|-----------|--|--------------|
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | | | |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| WISTAR HAN RATS MALE | | | | | | | | | | | | | |
| 400 mg/m3 | | | | | | | | | | | | | |
| * TOTALS | | | | | | | | | | | | | |
| Prostate | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Inflammation, Chronic | | | | | 2 | | | | | 1 | | | 2 1.5 |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Testes | + | + | + | + | + | + | + | + | + | + | | | 10 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Lymph Node, Bronchial | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Lymph Node, Mediastinal | + | + | + | + | + | + | M | + | + | + | | | 9 |
| Hyperplasia, Lymphoid | 3 | | | | | | | | | | | | 1 3.0 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Spleen | + | + | + | + | + | + | + | + | + | + | | | 10 |
| Thymus | + | + | + | + | + | + | + | + | + | + | | | 10 |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | |
| Mammary Gland | M | M | M | M | M | M | M | M | M | + | | | 1 |
| Skin | + | + | + | + | + | + | + | + | + | + | | | 10 |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | |

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

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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1) Minimal 3) Moderate

2) Mild 4) Marked

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

SPECIAL SENSES SYSTEM

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

URINARY SYSTEM

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

*** END OF MALE DATA ***

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|---|---|----|
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | 10 |
|--------------|---|---|---|---|---|---|---|---|---|---|----|

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

| | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|-----------|
| Heart | + | + | + | + | + | + | + | + | + | + | 10 |
|-------|---|---|---|---|---|---|---|---|---|---|-----------|

ENDOCRINE SYSTEM

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|--------------|
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | 10 |
| Inflammation, Chronic Active | | | 1 | | | | | | | | 1 1.0 |
| Ovary | + | + | + | + | + | + | + | + | + | + | 10 |
| Uterus | + | + | + | + | + | + | + | + | + | + | 10 |

HEMATOPOIETIC SYSTEM

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

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

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

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

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

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

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

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Lab: BNW

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

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

SPECIAL SENSES SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

URINARY SYSTEM

| | | | | | | | | | | | |
|-------------------|---|--|--|--|--|--|--|--|--|--|-------|
| Kidney | + | | | | | | | | | | 1 |
| Infarct, Multiple | 2 | | | | | | | | | | 1 2.0 |

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
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TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

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Lab: BNW

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

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|-------|
| Lymph Node | | | | | | | | | | | | | | | | | | | | 1 | |
| Renal, Infiltration Cellular, Mixed Cell | | | | | | | | | | | | | | | | | | | | 2 | 1 2.0 |

INTEGUMENTARY SYSTEM

NONE

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

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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

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

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

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

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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
|--|---|---|---|---|---|---|---|---|---|---|--------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| WISTAR HAN RATS FEMALE | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 200 mg/m3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| * TOTALS | | | | | | | | | | | |
| Respiratory Epithelium, Metaplasia, Squamous | 1 | | | | 1 | 1 | | | 1 | 1 | 5 1.0 |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

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

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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

ALIMENTARY SYSTEM

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

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|---|---|-----------|
| Blood Vessel | + | + | + | + | + | + | + | + | + | + | 10 |
| Heart | + | + | + | + | + | + | + | + | + | + | 10 |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|-------------|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |

* TOTALS

ENDOCRINE SYSTEM

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

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

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

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|-------------|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |

* TOTALS

HEMATOPOIETIC SYSTEM

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

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | |
|---------------|---|---|---|---|---|---|---|---|---|---|----|
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | 10 |
| Skin | + | + | + | + | + | + | + | + | + | + | 10 |

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

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

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

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID |
|-------------------------------|---|---|---|---|---|---|---|---|---|---|-----------------|
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| WISTAR HAN RATS FEMALE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 400 mg/m3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | * TOTALS |

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

RESPIRATORY SYSTEM

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL SENSES SYSTEM

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

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

* .. 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

TDMS No. 20523 - 01

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (Trim VX)

CAS Number: TRIMVX

Date Report Requested: 03/18/2011

Time Report Requested: 13:35:18

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

Lab: BNW

| DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | | |
|--------------------------------------|---------------------|---|---|---|---|---|---|---|---|---|-----------|------------|-----------------|
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | | | |
| WISTAR HAN RATS FEMALE | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | |
| 400 mg/m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | | | * TOTALS |
| Inflammation, Chronic | 1 | | | 1 | | | | | | | 2 | 1.0 | |
| URINARY SYSTEM | | | | | | | | | | | | | |
| Kidney | + + + + + + + + + + | | | | | | | | | | 10 | | |
| Pelvis, Inflammation, Chronic Active | 3 | | | | | | | | | | 1 | 3.0 | |
| Renal Tubule, Regeneration | 1 | | | | | | | | | | 1 | 1.0 | |
| Transitional Epithelium, Hyperplasia | 2 | | | | | | | | | | 1 | 2.0 | |
| Urinary Bladder | + + + + + + + + + + | | | | | | | | | | 10 | | |

*** END OF REPORT ***

* .. 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